THE IRON AGE

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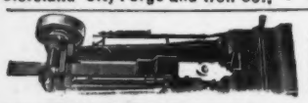

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See page 64

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SEE PAGE 25

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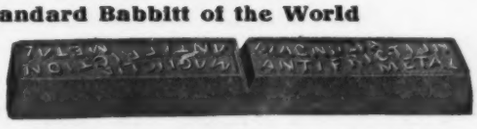
We manufacture everything in the Babbitt Line.



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THE IRON AGE

New York, Thursday, February 6, 1908.

A MODERN FACTORY POWER PLANT.

That of the Cleveland Twist Drill Company, Cleveland, Ohio.

One of the best indications of the growth of a manufacturing concern is the amount of power which it requires at different periods of its history for the operation of its works.

For the second time in the past eight years the Cleveland Twist Drill Company, Cleveland, Ohio, has found it necessary to erect a new and larger power plant. The first, completed in 1900, was considered a model for its time and kind and fully commensurate with the demand for some time to come. It was outgrown in a few years, however, and the plant just finished to take its plaec is one of the most thoroughly modern factory power plants in existence.

The Growth of Power Demand.

A brief survey of the stages in the company's evolution which have led up to the present increase of power may be of interest. In 1888, 14 years after the business was established, about 32 hp., purchased from a neighboring plant, containing a 75-hp. engine, was sufficient. In 1891 the adjoining factory, buildings and power plant entire were acquired. By 1894 the engine was being run at nearly its maximum capacity, and a gas engine was installed to help out in one department. By the summer of 1898 the engine was again so overloaded that an electric motor was resorted to as auxiliary, and this, with current bought from the city lighting company, relieved it of another department. By the following year the need of more power was so pressing that in July, 1899, the first new power plant was begun.

In the construction of this one radical change was made. Formerly all departments of the factory had been driven by belt directly from the engine. The power consumed in running the line and auxiliary shafting which this system necessitated was considerable, and when plans for the new plant were drawn up it was decided to substitute electric power with an induction motor in each department. Power for the motor was generated by a 275-hp. tandem compound engine directly connected to a 150-kw. 220-volt 60-cycle alternator and two Babcock & Wilcox water tube boilers of 153 hp. each, 160 lb. pressure, with chain grate stokers, supplied the steam. This proved sufficient until 1901, when a still further increase was demanded, and another larger tandem compound engine was installed. This one was of 350-hp., and was directly connected to a 200-kw. alternator generating current at the same voltage and periodicity as its predecessor. The extra steam required was supplied by a 260-hp. water tube boiler of the same make and style as the others, and also equipped with Babcock & Wilcox chain grate stokers.

With this addition made, the old engine was shut down to be held as a reserve, which it was expected would be sufficient for any increase in power demand that might occur within the next 15 or 20 years. In only four years, 1905, the old engine had to be started again. The space in the boiler house was then fully occupied so that another boiler could not be accommodated, and those in use were so overtaxed as to compel the installation of induced draft. Appreciating that there would be no further hope of increasing the capacity of the existing equipment it was decided in June, 1906, to build the present 1800-hp. boiler plant, and a contract was let for a 1300-hp. cross compound vertical engine.

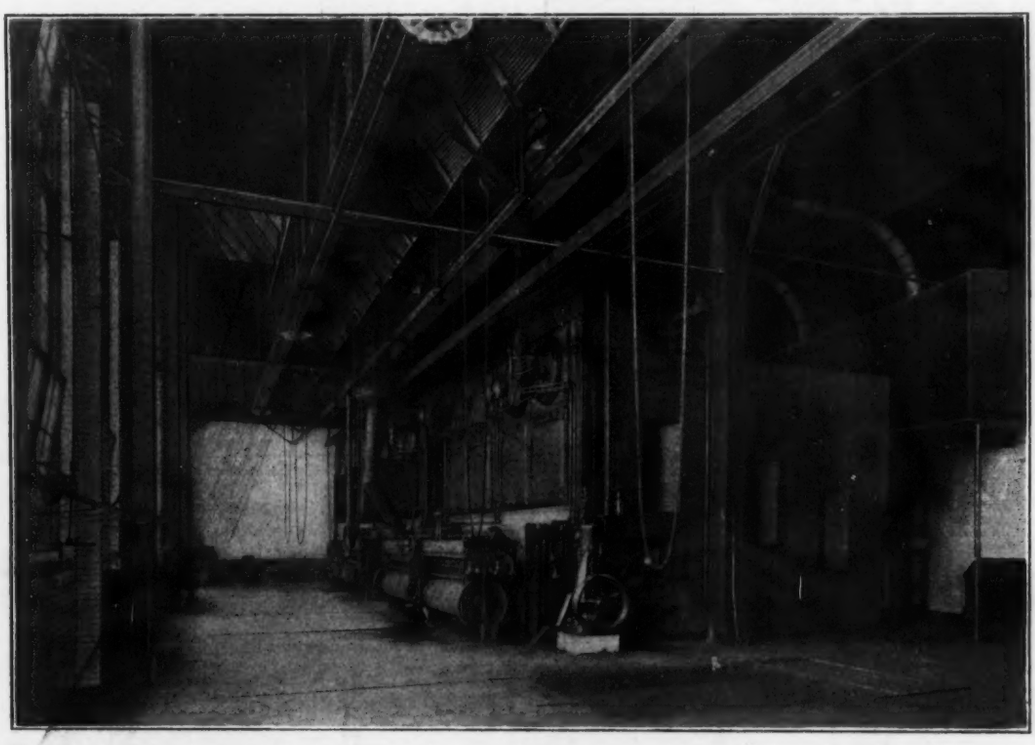


Fig. 1.—View in the Boiler House of the Cleveland Twist Drill Company's New Power Plant.

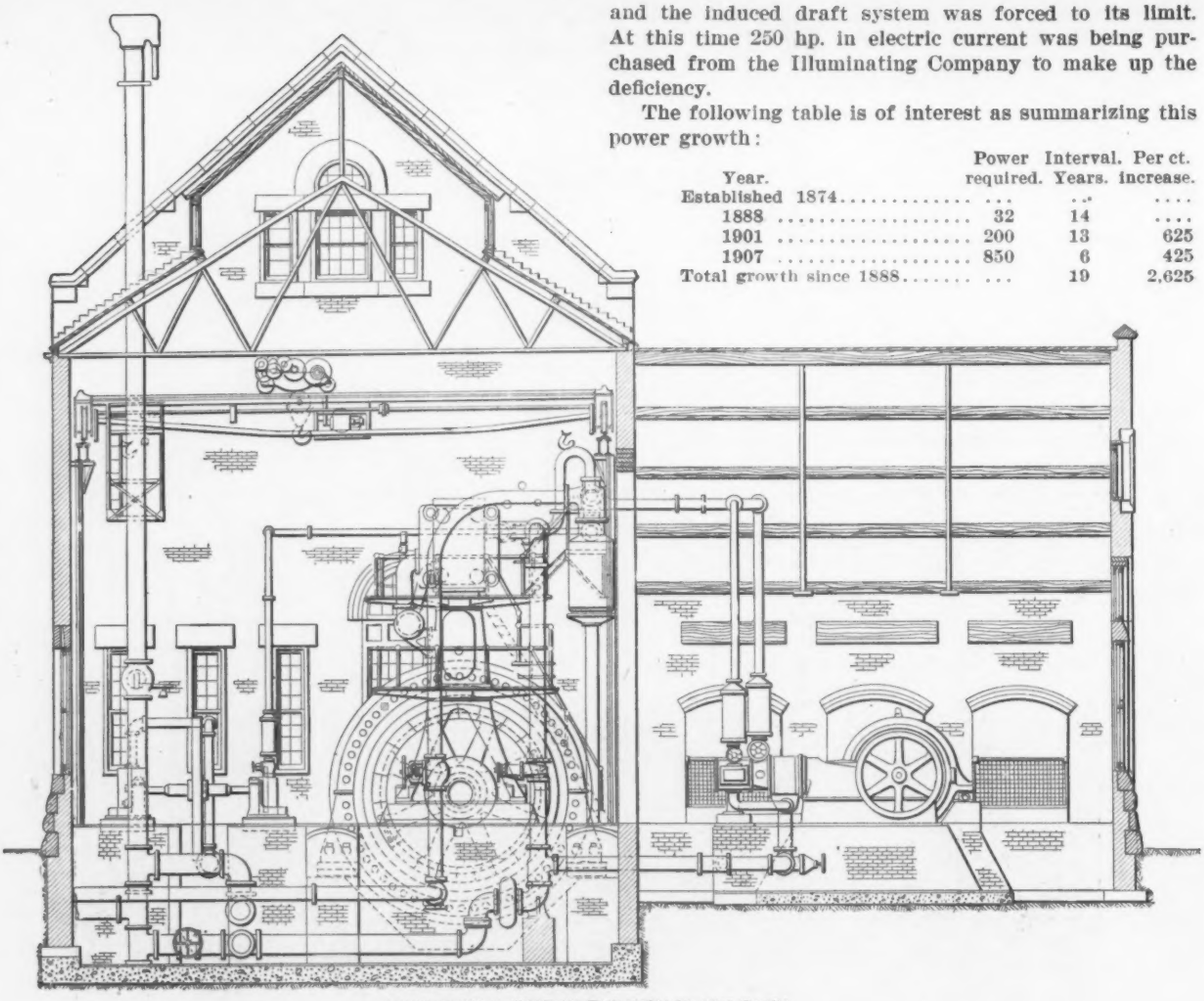
Ground was broken in August last year and none too soon, for in October the old engine failed under its excessive load and went permanently out of commission. As the factory at that time was using about 475 hp. it was necessary to buy current from the Cleveland Electric Illuminating Company.

When in March, 1907, a 250-kw. direct current generator directly connected to a 400-hp. four-valve Ball engine was added the immediate need of additional boiler power was still more evident. The new generator was intended for exciting the alternators and operating electric apparatus requiring direct current. With its addition to the plant almost 600 hp. was being taken from the boilers,

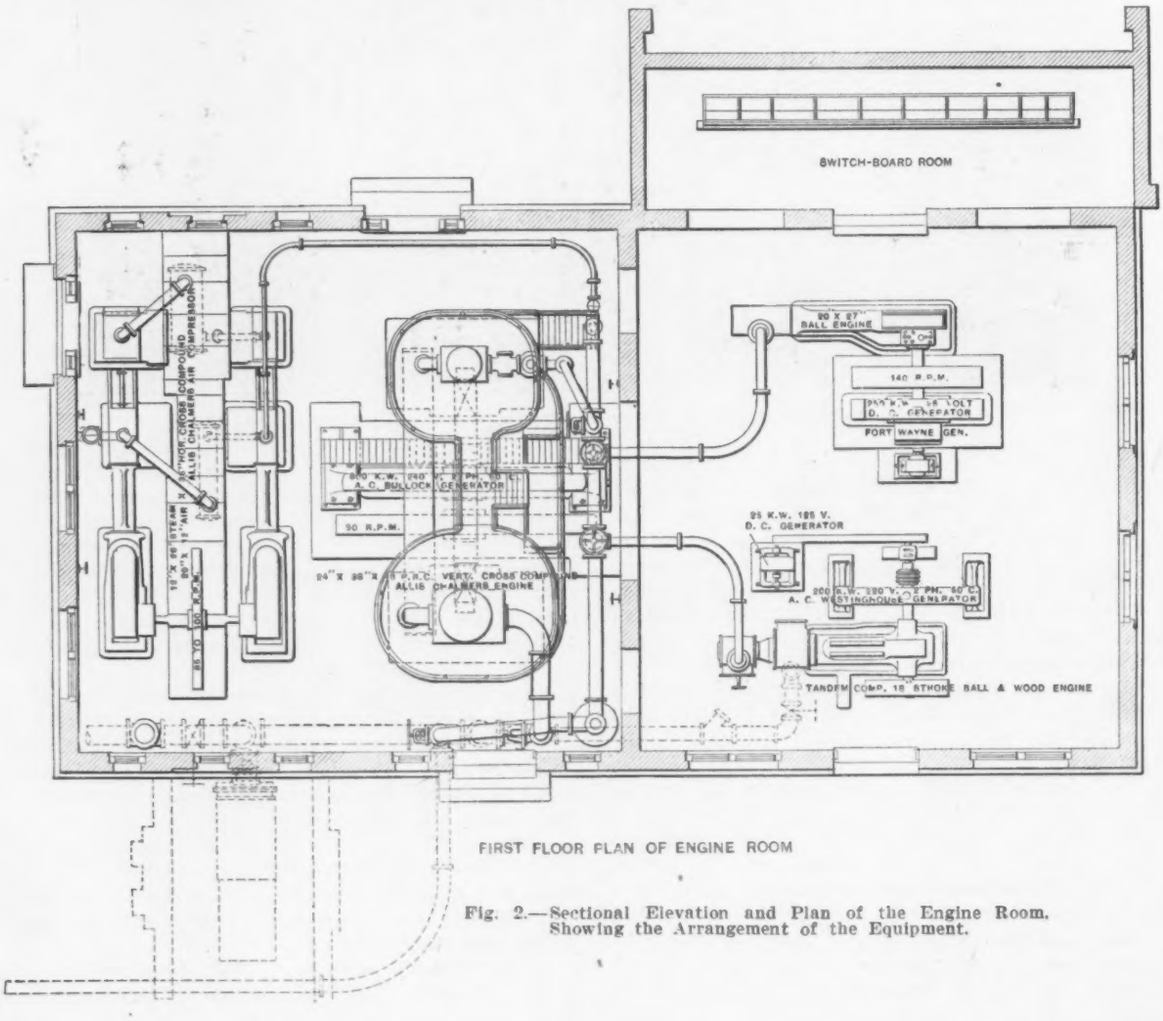
and the induced draft system was forced to its limit. At this time 250 hp. in electric current was being purchased from the Illuminating Company to make up the deficiency.

The following table is of interest as summarizing this power growth:

Year.	Power required.	Interval. Years.	Per ct. increase.
Established 1874	...	...	....
1888	32	14	....
1901	200	13	625
1907	850	6	425
Total growth since 1888	...	19	2,625



LONGITUDINAL SECTION THROUGH ENGINE ROOM


SWITCH-BOARD ROOM
20" X 42" BALL ENGINE
140 R.P.M.
FORT WAYNE GEN.
95 K.W. 125 V. D. C. GENERATOR
TANDEM COMP. 18 STROKE BALL & WOOD ENGINE
30 R.P.M.

FIRST FLOOR PLAN OF ENGINE ROOM

Fig. 2.—Sectional Elevation and Plan of the Engine Room, Showing the Arrangement of the Equipment.

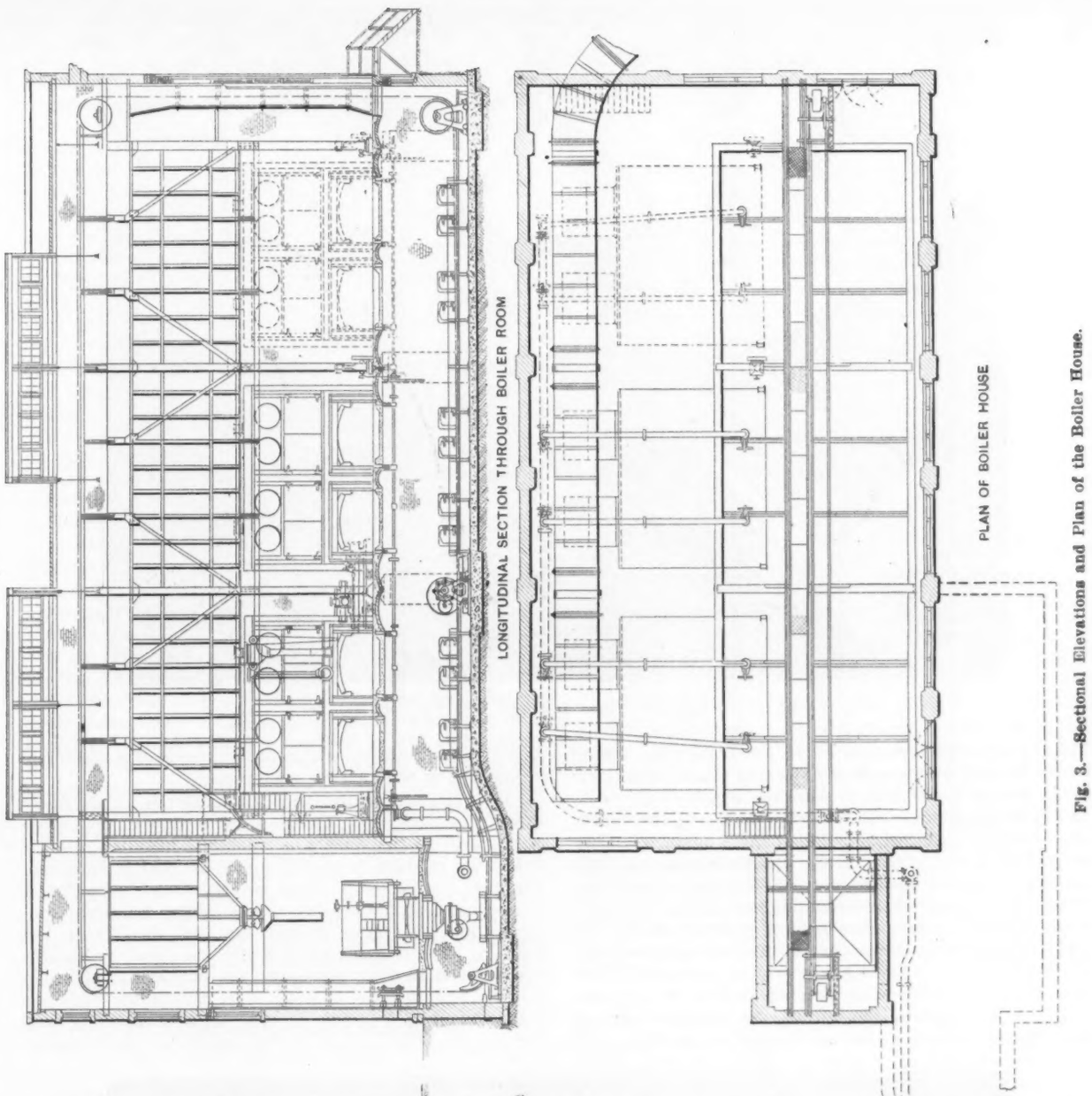


Fig. 3.—Sectional Elevations and Plan of the Boiler House.

The New Power Plant.

The power plant is divided into two separate parts; the engine, generators and air compressor are located in the engine room, Fig. 2, adjoining the main factory buildings, while the boilers, pumps, &c., are located in the boiler house, Fig. 3, which is situated across the railroad track dividing the property. The two buildings are connected by a tunnel through which are carried the steam and water piping, electric wiring, &c., and which also serves as a passageway for factory purposes. The plans show the general layout and the location of the principal parts of the plant, while the various sections show the comparative hights of the buildings.

The steam generating equipment consists of four Babcock & Wilcox vertical header type, water tube boilers of 300 hp. each, and space has been left for later installing an additional battery of two 300-hp. boilers. The boilers are designed for a working steam pressure of 160 lb. Each boiler has a heating surface of 3000 sq. ft. and a grate surface of 64 sq. ft. The grates are of the Chicago chain grate type, as made by the Babcock & Wilcox Company, and are of exceptionally heavy construction.

For operating the stokers there are two vertical engines made by the New York Safety Steam Power Company each of sufficient power to operate all the stokers. These engines are located on the main boiler room floor, where their easy accessibility insures proper care. They are connected by Morse chain drives to a shaft running through the basement, on which are mounted the eccentrics for operating the stokers, as shown in the elevations of the boiler house, Fig. 3, and the effect of the elimination of shafting and belts in the boiler room proper is well indicated in Fig. 1.

A radial brick chimney, 175 ft. high, with a flue 10 ft. in diameter, has been erected independent of the

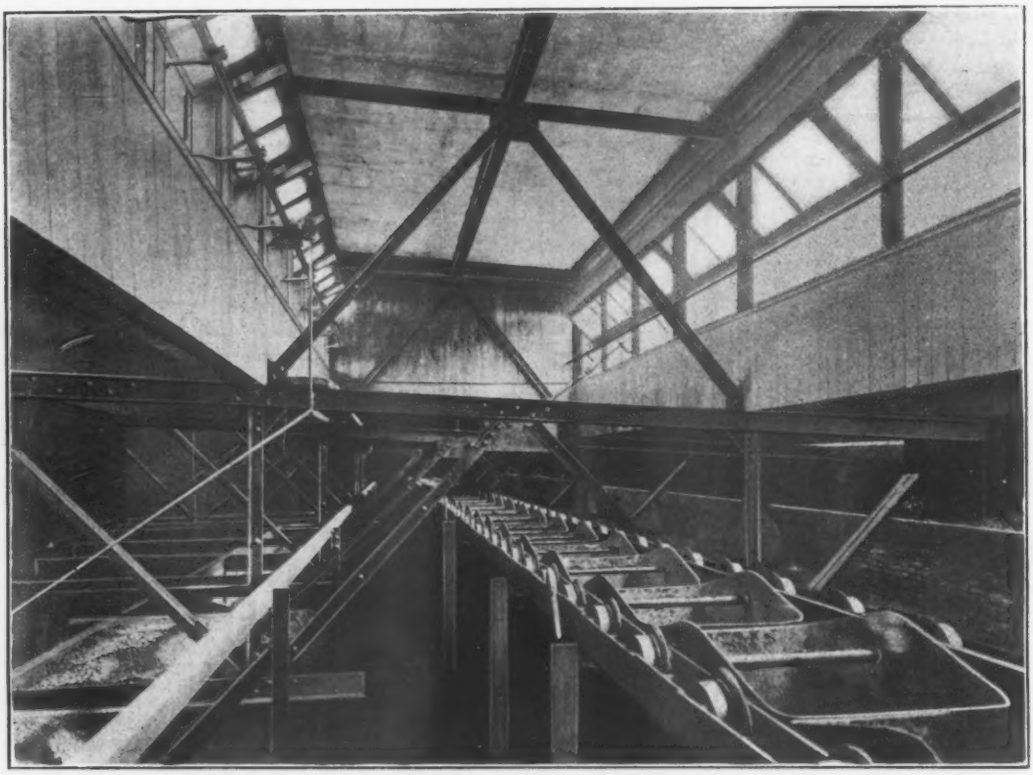


Fig. 4.—The Conveyor Where It Passes Over the Coal Bunkers.

boiler room, and is connected to the boilers by a steel smoke breeching of ample size, located overhead directly in the rear of the boilers, as shown in Fig. 3.

To provide storage for an ample supply of coal, bunkers have been installed above the boilers having capacity for sufficient coal to operate the plant for a month. The bunkers have their own supporting structure which is entirely independent of the building, consisting of heavy steel columns. The bunkers have concrete floors and walls formed within a framework of steel beams, between the lower flanges of which are sprung corrugated steel arch plates. A very hard wearing surface for the concrete was obtained by the use of granite screenings and neat cement mortar. The coal bunker is provided with two fireproof bulkheads to limit the spread of a fire if one be caused by spontaneous combustion.

The plant operates very satisfactorily with finely crushed or slack coal. To insure the feeding of the proper size of coal to the stokers, a crusher is installed in a pit below the railroad track, on which the coal is delivered. The fuel is received in dump bottom cars, from which it passes through the crusher into a bucket type coal conveyor, and the latter carries the coal directly to the bunkers. The tripping point where the conveyor buckets are dumped as they pass over the bunkers is alterable to distribute the coal at will. This part of the conveyor run is illustrated in Fig. 4. The same conveyor is used for carrying the ashes from the ashpits in the basement

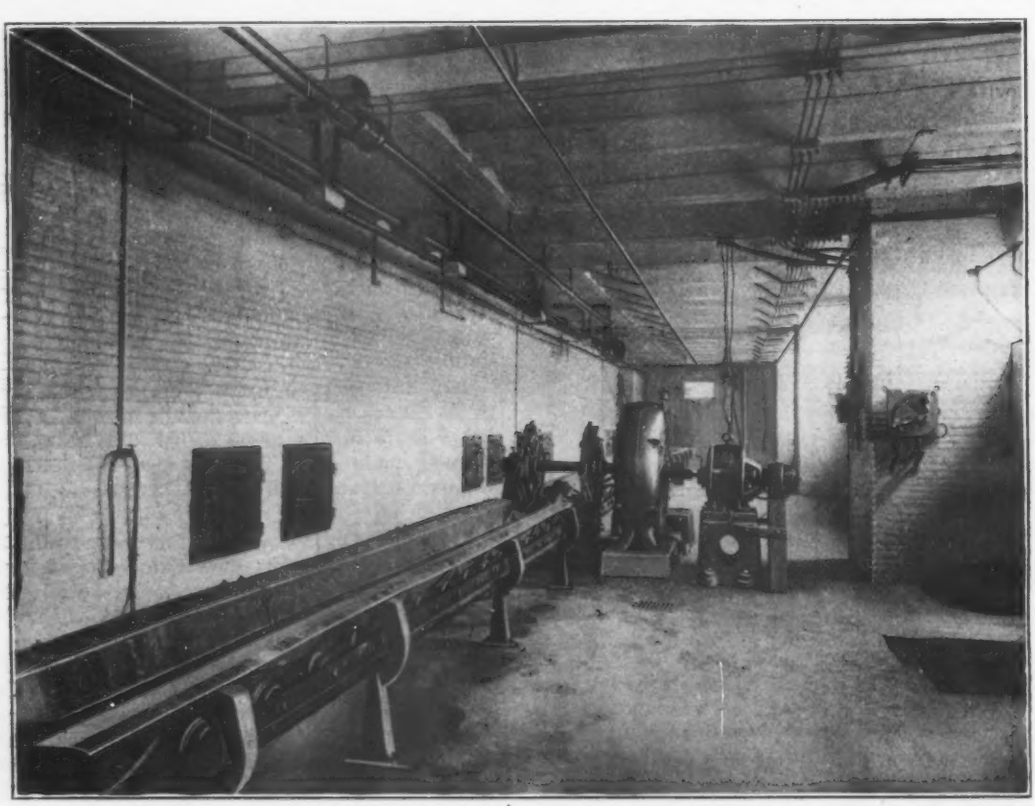


Fig. 5.—The Drive of the Conveyor and the Ash Receiving Part of Its Run.

to a large ash bunker located directly above the railroad track. A portion of the run of the conveyor through the basement and its drive are illustrated in Fig. 5. The complete course of the conveyor is indicated in the drawings of the boiler house given in Fig. 3. Both the coal crusher and conveyor are operated by electric motors, and were furnished and installed by the C. W. Hunt Company, New York.

Two boiler feed pumps are provided, each having ample capacity for feeding all of the boilers. The pumps are located in the rear of the boilers on the main floor. In designing the boiler house particular attention was given to allowing ample working space and good ventilation, both in the main boiler room and the basement. The walls of the boiler room are finished with white enamel brick, the boiler settings are of red pressed brick, and the plant as a whole presents an attractive appearance.

For driving the machinery throughout the factory induction motors are used, operated by two-phase, 220-volt alternating current. Two generating sets furnish the current. The larger or main unit consists of an 800-kw. generator directly connected to a 24 and 38 x 48 in. vertical cross compound noncondensing Corliss engine, operating at a speed of 90 rev. per min. This complete unit was furnished by the Allis-Chalmers Company. A supplementary generator having a capacity of 200 kw. and made by the Westinghouse Electric & Mfg. Company, is directly connected to a Ball & Wood 17 and 29 x 18 in. tandem compound engine running at 200 rev. per min.

In addition to the alternating current furnished by these units, there is also required a considerable amount of direct current, which is supplied at 115 volts and is used for exciting the fields of the alternating current generators, for operating electric cranes and for various other purposes. This current is generated by a 250-kw. Fort Wayne generator, directly connected to a 20 x 27 in. single cylinder four-valve engine operating at 140 rev. per min., made by the Ball Engine Company, Erie, Pa.

Experiments during the past few years have demonstrated that compressed air can be used to great advantage in connection with many of the processes employed by the Cleveland Twist Drill Company. To furnish this compressed air supply an Allis-Chalmers 12 and 20, 20 and 12 x 36 in. horizontal cross compound noncondensing two-stage air compressor, having a capacity of 1300 cu. ft. of air per minute, has been installed in the engine room.

In designing the system of steam piping for this plant the main intent has been to have it as simple as possible, consistent with safety and good working conditions, and to avoid as far as possible all complicated cross connections. While the system is extremely simple, continuous operating and safety are amply provided for by careful design and the use of the best material, such as extra heavy pipe with welded steel flanges, extra heavy valves and fittings, and the use of long sweep bends wherever practical, as well as the use of copper and brass pipe for all boiler feed lines.

The switchboard which controls the current distribution is not only handsome in appearance, but extremely simple and well adapted to the requirements. It is fitted with the most modern and approved instruments, and is located in a separate fireproof room adjoining the engine room.

The engine room is served with an electric traveling crane, so that facilities are at hand for accomplishing repairs in the shortest time, or to allow any changes in the arrangement which may seem desirable, without seriously interfering with the continuous operation of the work.

The entire plant was designed by and erected under the supervision of George S. Rider & Co., consulting engineers, Cleveland, Ohio.

The Ellwood Ivins Tube Works, Oak Lane Station, Philadelphia, Pa., calls attention to a new departure in tool steel. Those who have been boring out solid bars or rods, wasting half or more of the steel in borings and turnings, as well as taking much time to do it, are directed to the advantages of the company's seamless tool steel tubing for such purposes. It is furnished bright, smooth and clean, with no scale on it, and in precisely the required size, inside and out. It can simply be cut to the length desired, tempered, and, as the company says, "the trick's done."

The Midvale Steel Company's Report.

The annual report of the Midvale Steel Company, Philadelphia, covers the operations for the 12 months ending October 31, 1907, and shows the following:

Profits for year, after deducting all costs, charges and expenses, including depreciation		$914,929
Dividends paid	$206,250	
Less adjustment value of bar steel	167,122	
		373,372
Balance, surplus, for year		$541,557
Surplus as of October 31, 1906		10,700,385
Total surplus, October 31, 1907		$11,241,942

The net earnings for 10 years, ending October 31, 1898, to 1907, both inclusive, after deducting all costs, charges and expenses, including depreciation, management salaries, commissions and selling expenses, but not taking into account any interest on capital employed in the business, were as follows:

Year.	Net profits.	Year.	Net profits.
1897-98	$526,198	1902-03	$748,488
1898-99	1,291,922	1903-04	918,543
1899-00	1,599,339	1904-05	1,632,339
1900-01	1,282,151	1905-06	962,167
1901-02	1,074,523	1906-07	914,929
Total			$10,950,599

The balance sheet as of October 31, 1907, is as follows: Assets: Land, $248,501; buildings, $2,576,910; plant and machinery, $6,611,061; tools, $519,943; office and miscellaneous equipment, $30,599; patterns, $200,000; total plant, $10,187,014. Worked material, $1,839,456; raw material, $389,132; merchandise, $333,135; coal, $19,654; stores, $45,866; bills and accounts receivable, $982,960; cash, $183,326; total cash assets, $3,793,529; total assets, $13,980,543. Liabilities: Capital stock, $750,000; bills payable, $1,200,000; accounts payable, $788,225; sundry commission accounts, $375; surplus, $11,241,942.

The Buffalo Forge Company Fills an Order in Record Time.—On January 10 the Buffalo Forge Company, Buffalo, N. Y., received an inquiry from the Strong, Carlisle & Hammond Company, Cleveland, Ohio, for the best possible shipment of a large electric blower with motor attached. The motor required was of a special speed, and communication with the motor builders developed the fact that they would undertake to ship such a motor in five working days. Allowing for express shipment from the works of the motor builders, the Forge Company promised shipment of the order in 10 days after its receipt. The order came in Saturday, the 11th, the motor was ordered by wire the same date, and it was received by express Thursday, the 16th. In the meantime, patterns had to be changed and castings made for the special subbase to accommodate the motor. This work also involved changes in the drawings. Everything being in readiness the work of assembling was done on Friday and shipment was made Saturday, the 18th, a few hours less than a week after the order came in. This blower has a capacity of 6500 cu. ft. of air per minute at a pressure of 6 oz. per square inch, when operated at normal speed of 1130 rev. per min. Usually from four to six weeks is required for shipment on an outfit of this kind.

Dr. S. C. Dickey, president of the Technical Institute, Indianapolis, was the guest of the Citizens' Industrial Association of St. Louis, January 21, and delivered an address. A movement is under way to establish industrial training in connection with the public schools of St. Louis, beginning with an endowment of $2,000,000. He says his Technical Institute is in better condition than at any time since it was opened in 1903. The student body is the largest and the equipment of the workshops is constantly being enlarged and improved.

Automatic Hinge Pin Heading Machinery.

In recent years the art of cold heading has been so developed that shapes which it was once thought necessary to cast or forge can now be made most economically from cold wire, even when several handlings are necessary. This naturally opens up new fields for cold heading machinery. Experience has demonstrated that a "full automatic" machine is not always desirable or as profitable as one in which the operations are divided for two or more handlings. The kind of goods made and the quality of help employed are also determining factors in many instances, since automatic machinery is most successful when attended by skilled operators.

The article in mind, and the machinery for manufacturing which is to be described, is a ball tipped hinge pin, which consists of two parts, the hinge pin proper, having the collar and ball at the top, and the short ball tip, which goes in the lower end of the hinge. To make this article in its various sizes directly from a coil of wire some expensive though successful mechanical combinations have been designed, but it is a question whether the economy is not in favor of simpler and less costly machinery which can be operated more rapidly and with less attention. A process developed by the E. J. Manville Machine Company, Waterbury, Conn., which has been very satisfactorily employed by its customers to manufacture these pins, uses first a standard open die cold heading machine to make a blank of proper length, having a collar formed near one end, such blanks being produced at a rate of from 80 to 150 per minute, depending on the size of wire used. The principal interest attaches to the automatic machine, illustrated in Fig. 1, by which these collared blanks may be rapidly converted into finished ball tipped pins. It consists of an open die double stroke heading machine, combined with a suitable feeding mechanism, into the hopper of which a quantity of blanks of the form shown at the top in Fig 2 may be thrown promiscuously, and by which they will be selected and started properly down an inclined raceway hanging by their collars; since there is more metal on one side of the collar than on the other they will all hang with the long end down. The blanks in line reach the bottom of the feeding track, from which point they are taken one at a time by a carrier and fingers, which present them in exact position between two gripping dies. These dies when closed form a mold to rigidly hold all of the blank except the short end which is to form the ball, and this projecting portion is compressed into proper shape by two punches, which act upon it. The first is so shaped as to centralize and partially upset the amount of metal required for the ball, as shown by the middle piece in Fig. 2, and the second punch has a hemispherical recess corresponding with that formed in the dies, so that when this punch and the dies are brought firmly together, the ball is perfectly formed, as in the lower piece in Fig. 2. The punches then recede, while the dies open and a mechanical stripper releases the finished blank, so that it drops from the dies by gravity. By this process these pins may be formed at the rate of 60 per minute—that is, when working on a pin suitable for a 3½ or 4 in. hinge.

The machine used is one in which the heading punches are carried on the front end of a reciprocating crank driven gate, but the holder which contains the two punches is movable vertically, and is operated up or down at each alternate revolution of the crank shaft, so that the two punches may work alternately on the blank to be headed, and, when in their respective positions, are automatically locked rigidly to the gate, so as to prevent their dodging or being strained out of accurate alignment with the blank to be headed.

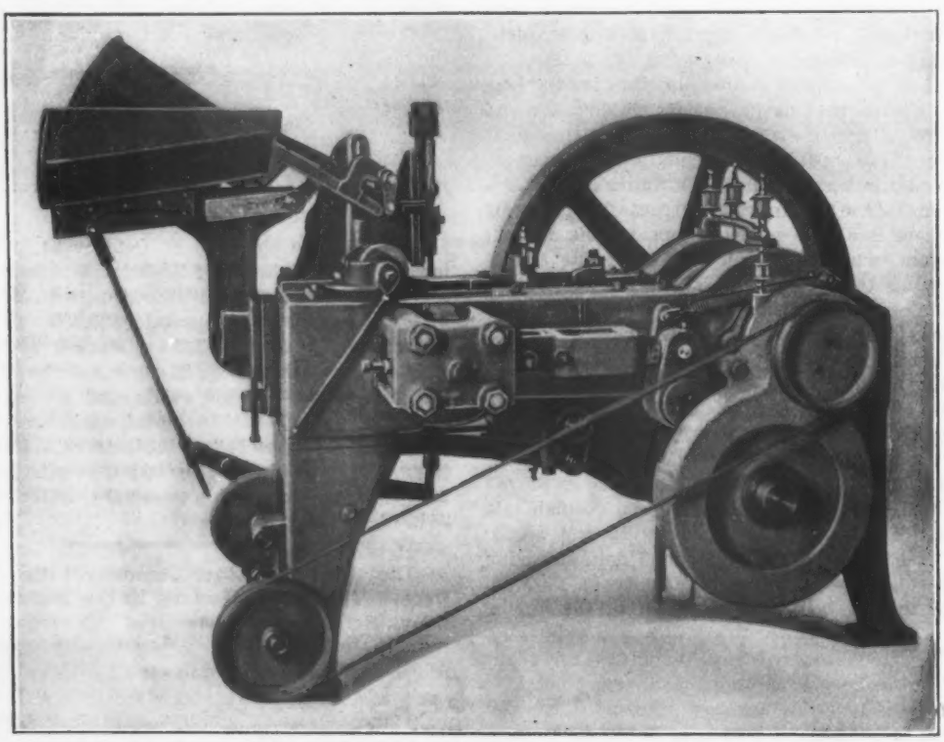


Fig. 1.—An Open-Die Double-Stroke Heading Machine for Forming Hinge Pin Heads, Built by the E. J. Manville Machine Company, Waterbury, Conn.

One of the two dies between which the blank is held while being headed is stationary, while the other is attached to a toggle plunger, moved at proper intervals through suitable connections and a bell crank lever by a cam on the lower or cam shaft of the machine. This shaft is geared to make one revolution for each headed pin produced. The cam and bell crank must be powerful, and, therefore, provision is made to relieve the strain if the blank does not fall in proper place between the gripping dies, or is caught between the faces instead of in the groove. When the resistance becomes too great the pressure is relieved by the breaking of a small square cast iron plate, which is easily and quickly replaced after the obstruction is removed.

In the hopper a fan shaped blade, formed with a recess in its upper edge, is pivoted so as to rise and fall through a pile of blanks. During its upward stroke it picks up the few blanks which lie in the proper position in its path, and these are lifted, as before stated, by their collar portion. The blanks caught slide down to-

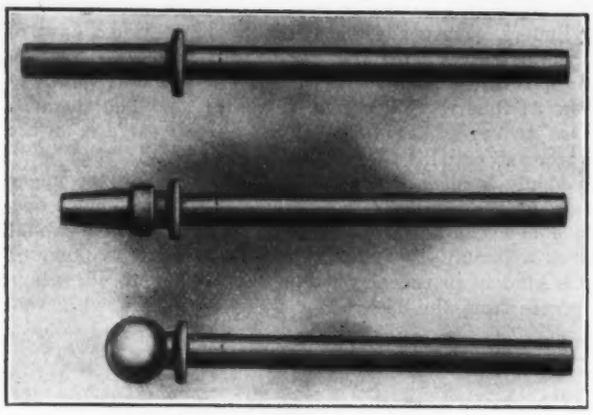


Fig. 2.—The Original Blank and the Two Stages in the Forming of the Ball End of the Hinge Pin.

ward the oulet at the lower end, where they are retarded by a mechanism which permits only such blanks as have their short end uppermost to pass on; those in wrong position are returned to the hopper. This hopper blade is belt driven, so that if choking occurs the belt slips, but it seldom does with this character of blank.

There are several novel points in the mechanism illustrated in Fig. 3 for taking the single blank from the line presented and delivering it between the dies. Instead of the usual custom of bringing the line of blanks around a curve so that the last or lower one lies in a horizontal plane, here a transferring carrier presents itself in a vertical position, adjacent to the lowest blank of the line. The cut-off slide then forces the first blank into a spring recess in the carrier and at the same time positively holds back the blanks following. This carrier then turns through an arc of 90 degrees, and on nearing the lower end of its movement, which brings the blank into a horizontal position, moves sideways a short distance, so that the blank is about over the center of the machine. Here it rests while vertically reciprocating spring fingers pick the blank from the recess of the carrier and raise it sufficiently to allow the carrier to return. These spring fingers, having grasped the blank by the part which is to be formed into a ball, now descend between the dies, where the latter can surround and grip the blank; then the fingers ascend for another blank. The spring fingers are attached to the lower end of a shaft, which is carried by a cam-actuated vertically moved slide, the purpose of which is explained later.

The three stages in the making of the short pin are the same as for the long pin, and are represented by the views in Fig. 2, if cut off at the dotted lines. The short pin from its form has to be handled in a slightly different way. The short blanks, having the collars formed as on the long blanks, on being thrown in the hopper will come up with the long end down, so when they are lined up in the tracks and brought to the delivering point they all have the short end up. By changing the shape and position of the oscillating carrier, the arm of which is suitably lengthened, when a blank is delivered into it and the arm swings down to present the blank to the fingers, it is presented with the collar and short end toward the crank shaft of the machine, instead of toward the hopper. The vertically moving fingers now pick up the blank as before, by the part which is subsequently to form the ball, and lift it from the carrier, but as they descend the vertical shaft which carries them is rotated a half revolution, so that the blank is turned and presented between the dies in the same relative position as the long blank. After the dies grasp it the fingers ascend, turning again through a half revolution, ready to receive the next blank. When handling the long blanks this finger shaft is held against rotation by a set screw, but for the short blanks the screw is removed and a slotted piece is secured to the frame, which surrounds the center portion of the shaft. This is flatted on two opposite sides with a half-turn spiral in its central portion, so that as the shaft is carried up and down through this fixed piece it will be rotated a half revolution during each up and down stroke.

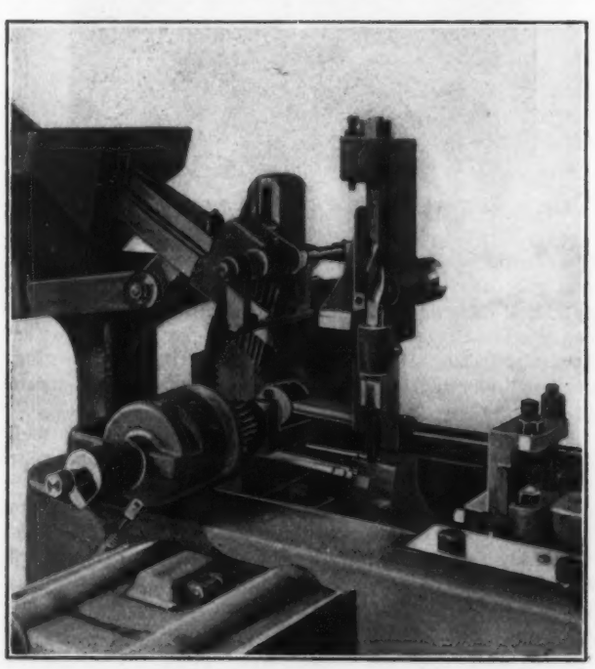


Fig. 3.—A Detail of the Blank Feeding Mechanism.

The Production of Pig Iron in Canada in 1907.

The American Iron and Steel Association has received from the manufacturers the statistics of the production of pig iron in Canada in 1907. The total was 581,146 tons, against 541,957 tons in 1906, an increase of 39,189 tons, or over 7 per cent. In the first half of 1907 the production amounted to 270,100 tons and in the second half to 311,046 tons, an increase of 40,946 tons. Of the total 572,025 tons was made with coke, 8971 tons with charcoal and 150 tons with electricity. The production of pig iron in Canada in the last 14 years is given below:

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1894	44,791	1899	94,077	1904	270,942
1895	37,829	1900	86,090	1905	468,003
1896	60,030	1901	244,976	1906	541,957
1897	53,796	1902	319,557	1907	581,146
1898	68,755	1903	265,418		

The production of basic pig iron was 341,257 tons, against 246,228 tons in 1906, and of Bessemer pig iron 154,910 tons, against 165,609 tons in 1906. Basic pig iron was made in 1907 by four companies owning nine furnaces and Bessemer pig iron by two companies owning three furnaces. The basic and Bessemer pig iron was all made with coke. Canada has not made spiegeleisen or ferromanganese since 1899. On December 31, 1907, Canada had 16 completed furnaces, of which 14 were in blast and 2 were idle. Of the total 13 usually use coke for fuel and 3 use charcoal. In addition 3 coke furnaces upon which work was suspended some time ago were partly erected on December 31.

The Gandy Belting Company, Baltimore, Md., has won a suit in the United States Court for the Northern District of Illinois, Eastern Division, against the Weller Mfg. Company, Chicago, and a decree has been issued perpetually restraining the latter from selling, advertising, offering or announcing for sale, or supplying stitched cotton belting painted or dyed red in imitation of the red stitched cotton belting manufactured by the Gandy Company, accompanied by the word "Gandy" affixed or applied thereto, or used in connection with the sale thereof. It also permanently restrains the Weller Company from in any way using the trademark of the Gandy Company. The practice has grown in recent years among certain manufacturers and dealers of selling all kinds of cheap stitched cotton duck belting, claiming it to be the genuine Gandy belting, and the Gandy Company has been forced to protect the trade against such imposition. Consumers are warned to be particular and see that the belting they buy bears the words "Genuine Gandy" stamped at every 10 ft.

The Emerson Steam Pump.

While a steam pump in the sense that it is operated by steam, the pump herewith illustrated, made by the Emerson Steam Pump Company, Alexandria, Va., bears no resemblance to the machine usually known by that name. It has no pistons, plungers or similar moving parts; in fact, it has no moving parts except the valve and valve mechanism, and although there are two cylinders they are alike in their use, both steam and water being admitted to each instead of being isolated from one another in separate cylinders. The pump operates on the vacuum principle for its suction, and pressure principle for its discharge, being in this respect similar to the usual pump, but there is no interposition of a sliding member or other mechanical part to separate them; the steam and water are substantially in contact, although, as later explained, a layer of air separates them to prevent or diminish the condensation of steam before it is intentionally condensed to create the suction vacuum.

Because rubbing surfaces and constricted passages are eliminated, the pump is able to handle satisfactorily water containing sand or gritty material, and even acids or ingredients tending to produce corrosion. For its capacity it is light in weight, and the ease with which

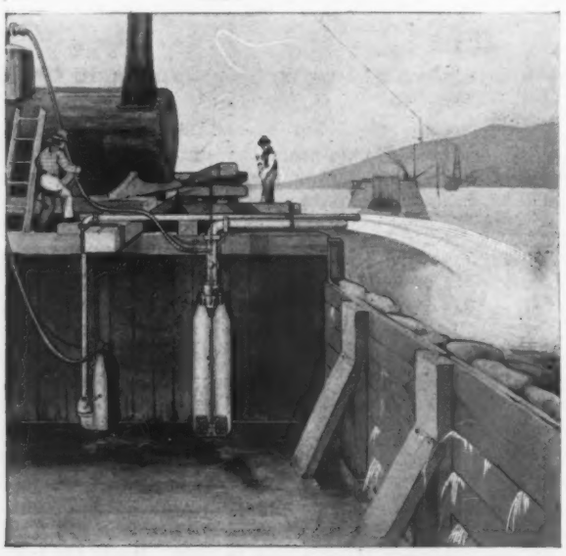


Fig. 1.—A Typical Installation of the Emerson Steam Pump.

it may be handled commends it for use where its position would be frequently shifted, as in the unwatering of cofferdams, caissons, mines, quarries and isolated work of all kinds. Its portability in such a service is indicated in Fig. 1.

The idea of raising water by condensing steam in a chamber and then forcing it to a higher level by the direct pressure of steam on the surface of the water in the same chamber originated with Capt. Thomas Savory, who, in 1698, patented what he called a fire engine. Properly speaking the device was not an engine, but a pump. In operating it one cylinder was filled with steam, the steam valve was closed by the operator and a spray of water was then injected into the steam. The valves were manually operated and an almost continuous stream of water was delivered. As a pumping engine it was used extensively until Newcomen's atmospheric engine displaced it, and then piston pumps first began to come into the field. That the Savory pump was superseded was largely due to the fact that the expansive power of the steam was wasted, and that the steam consumption was therefore enormous. In the Emerson pump there is a saving of at least 25 per cent. in the amount of fuel by using an early steam cut-off, which is made possible by the design of the rotary slide valve steam ports.

The operation will be best understood from Fig. 2, which shows a pictorial section with the parts working. The pump will be seen to consist of two long cigar shaped cylinders, each connected at the bottom through upward opening valves with the suction pipe and also through similar valves with the discharge pipe, as best shown in Fig. 3; thus there are four valves in all. The steam is used twice; first to press down on the surface of the water and expel it through the discharge pipe, then being suddenly condensed by injecting cold water in the upper part of the chamber, vacuum is created which draws in a new charge of water. Obviously the pump would work with only one cylinder, and it is so built (a pump of this kind is also to be seen in Fig. 1), but an advantage accrues from the use of two cylinders in that while one

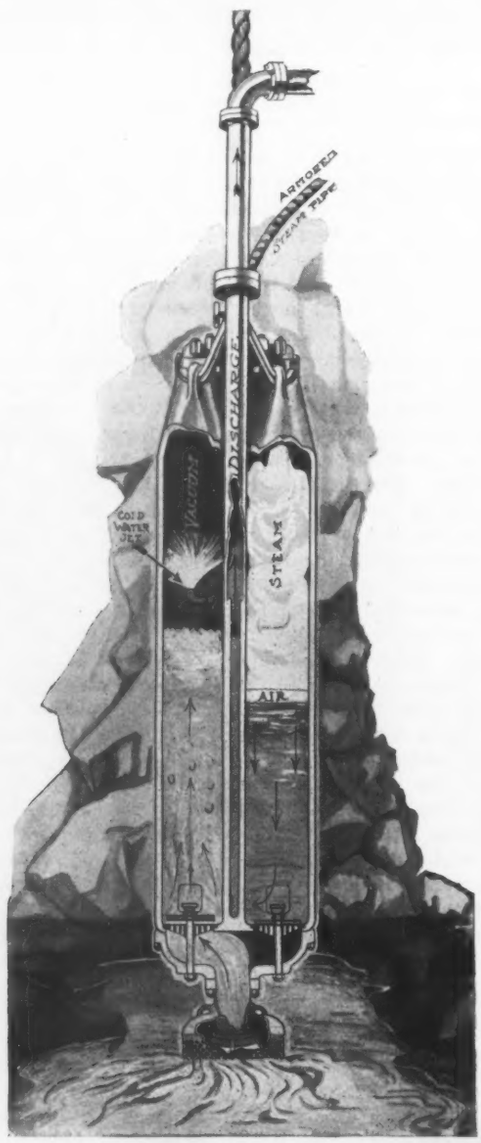


Fig. 2.—A Broken View of the Pump, Showing Its Action.

is drawing in a supply of water the other is discharging, and the otherwise intermittent action of the individual cylinders is converted into a constant flow from the common discharge pipe. The condensing jets of water are supplied by the cylinder at that time discharging, each cylinder in this way serving to condense the steam in its mate.

The form and construction of the pump are also well brought out in Fig. 4, which shows front, side and rear elevations of the pump, illustrating also the piping connections. Simultaneously with the condensation of steam which draws in the water air is admitted through check valves at the upper ends of the cylinders, but in much smaller quantity proportionally than the volume of the water. This air, being heavier than the steam next admitted on the pressure stroke of the cylinder, settles to the surface of the water and thereby separates the steam and water, preventing condensation during the

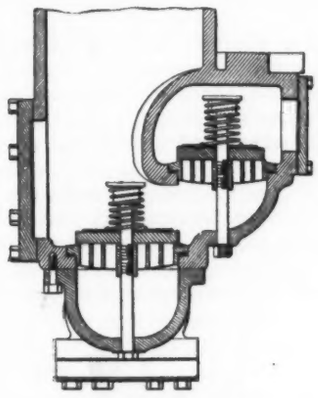


Fig. 3.—Side Sectional Elevation Through the Suction and Discharge Valves.

downward action of the steam. The alternate filling and discharging of the cylinders is so rapid that the walls of the cylinders suffer little change in temperature, and no great amount of condensation is caused by the walls of the cylinder.

The mechanism for controlling the admission of steam alternately to the two cylinders is all incased, so as to be entirely protected from any danger of injury or clogging by dirt or other accumulation. The pump can be operated with entire success when nine-tenths submerged in water. The admission and cut-off valve is a flat rotary valve, which is revolved continuously through reducing gears by a small triple cylinder steam engine located between the two upper ends of the cylinders. The exhaust of this engine empties into the suction pipe of the pump; thus no steam is exhausted to the air, making the pump ideal for underground work, where greasy steam in the air would be a discomfort. It is important that the engine is at the top, and hence no part of it, or of the rotary valve, is ever reached by the material being pumped. The steam chamber above the flat rotary valve is always filled with steam as long as the throttle is open. The rotary valve has an open segment, and as it continually revolves alternately exposes the ports leading to the two cylinders and cuts off the supply before each cylinder is

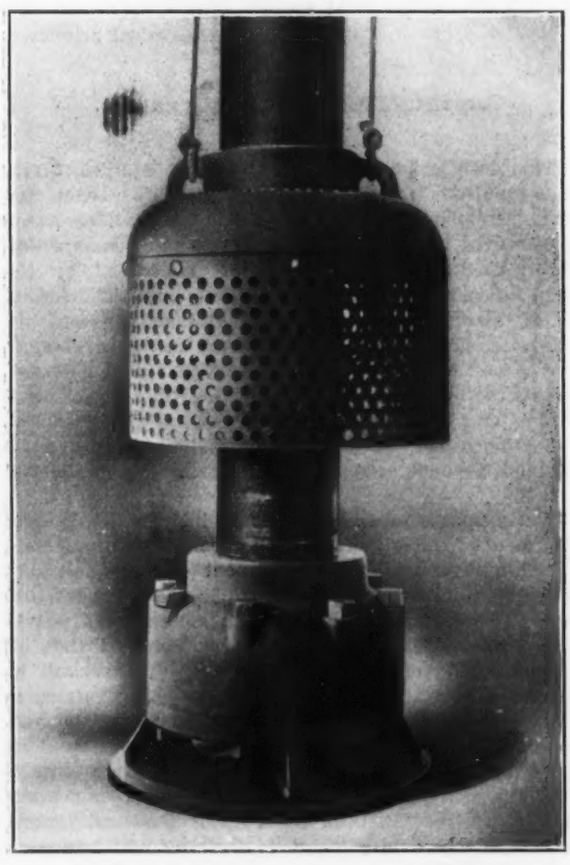


Fig. 5.—The Foot Valve with the Strainer Raised.

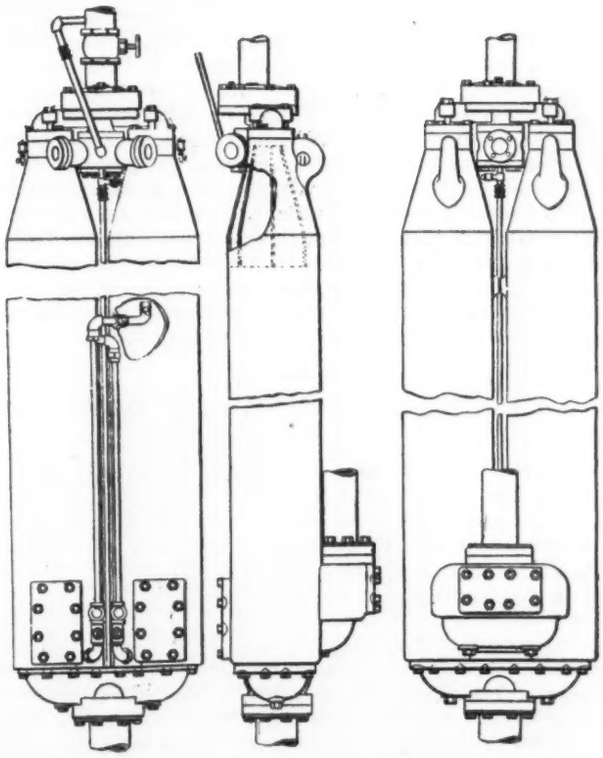


Fig. 4.—Front, Side and Rear Elevations of the Pump.

filled, so that the steam acts expansively until the discharge begins in the other cylinder which injects condensing water in the first. By a throttle valve on the engine supply the speed of the engine may be regulated to give sufficient time to the cycle, as adjusted to the head worked against, so that the full capacity of each cylinder may be utilized in each intermittent filling and discharge. An exact adjustment is not important, since the alternate action of the two cylinders makes the operation continuous. The cylinders, when such might be desirable, may be located at the bottom of the shaft and the steam controlling mechanism at the top of the shaft, or at some distance away from it, without interfering with the automatic efficient running of the apparatus.

In proportion to its capacity the weight of the pump is small. A pump delivering 1200 gal. per minute against a 25-ft. head weighs only 2700 lb. The low weight is possible because the pump has no independent engine for its operation. The weight of such parts is therefore eliminated. It is claimed that the pump will lift three times as much water as any other sinking pump of equal weight, or that can be placed in the same space, and also that it can be had of a capacity four times as great as that of any other pattern of sinking pump. The long drawn out form of the pump is an advantage when it is used in such locations as mine shafts, cofferdams, sumps and caissons. The relatively small amount of space which it takes up is well brought out in Fig. 1.

Concerning the durability of the pump, it is of course evident that grit or foreign matter cannot work any immediate or serious injury to the apparatus, since the water containing such matter never comes into con-

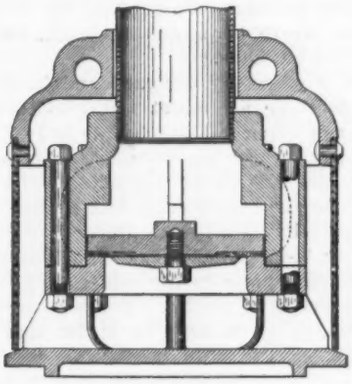
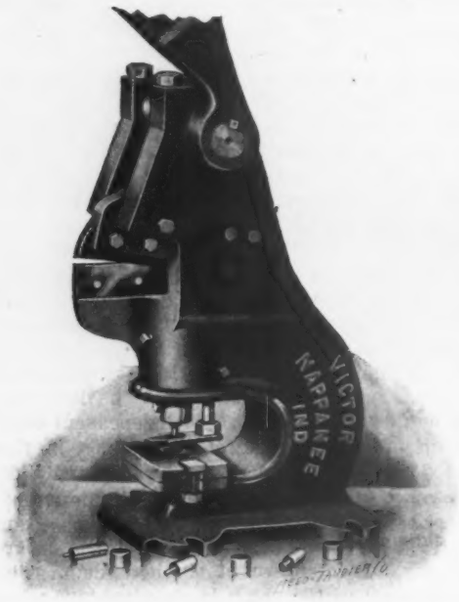


Fig. 6.—Vertical Section of the Foot Valve and Strainer.

tact with anything which moves except the four round rubber valves. In the vicinity of each valve is a hand hole and cover plate, through which access to the valves is possible when they do need attention. It is, of course, necessary to keep large bodies out of the pump cylinders, such as might clog the valves and prevent their proper working. A foot valve and strainer of the form illustrated in Figs. 5 and 6 answers the purpose very satisfactorily. It can be very easily cleaned by lifting with the cords as shown in Fig. 5, when the outside needs only to be scraped or brushed to remove matter that may cling to the perforations. Such grit as could pass through this foot valve or strainer does not come in contact with plungers, pistons, piston rods, glands, stuffing boxes, or other moving parts which it could quickly destroy.

The Victor Hand Punch and Shear.

For general service on light and moderately heavy work, the Nappanee Iron Works, Nappanee, Ind., has brought out a new combination hand punch and shear known as the Victor. A particular feature of convenience is the arrangement of the lever that permits both cutting and punching work to be done either from the front or rear with equal facility. The body is cast in one piece, and the eccentric is made of solid steel with a mortise joint at the top of the thrust having a direct bearing of 1½ in. The shear blades, instead of descending perpendicularly upon the work, are set to make a draw cut. The punches are placed in split sleeves, which are secured in position by a set screw. To insert new punches it is therefore necessary only to loosen the set screw and remove the old punch, which may be easily replaced with a piece of drill rod of proper size and length. The die plates are adjustable and can be conveniently removed when changing punches. To provide for wear a gib is placed in the sleeve by means of which the necessary adjustment can be made.

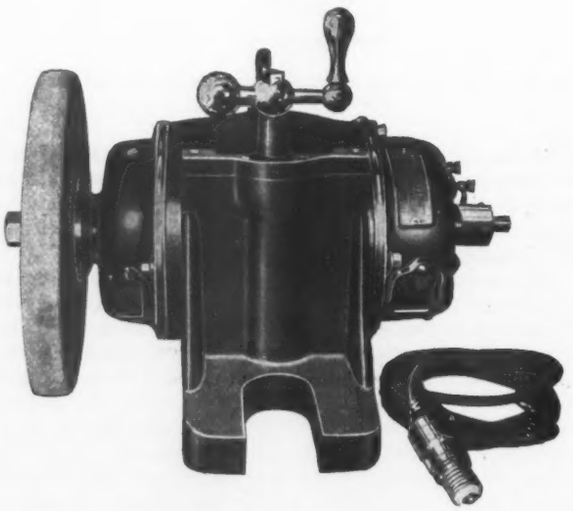


The Victor Combination Hand Punch and Shear Made by the Nappanee Iron Works, Nappanee, Ind.

This tool is especially designed and built for use in blacksmith, machine and sheet metal shops requiring a tool of moderate capacity. It is made in two sizes, No. 1 and No. 2; the former has a capacity to shear 3-16-in. flat or ⅝-in. round stock and to punch ¼-in. holes in a 3-16-in. plate to the center of a 6-in. circle. The No. 2, which is especially adapted to tinners' use, will shear 3-16-in. flat or ⅝-in. round stock, and will punch ¼-in. holes in a 3-16-in. plate to the center of a 12-in. circle. The shipping weight of the No. 1 is 100 lb., and its dimensions are 8 in. by 10 in. base by 18 in. high; the No. 2 weighs 135 lb., measures 10 x 14 in. at the base and is 18 in. high.

A New U. S. Portable Electric Grinder.

The portable electrically driven grinder illustrated herewith and manufactured by the United States Electrical Tool Company, Cincinnati, Ohio, is especially adapted for heavy parallel grinding, surface grinding and circular grinding, when used on a lathe, planer or boring mill. It is well suited, for example, for grinding in a lathe large rolls which cannot be handled on the ordinary grinding machine, or for grinding and polishing crank disks or similar parts. Another special feature is its adaptability in grinding between the Vs of an engine lathe, first with an emery wheel and then with a wooden wheel faced with leather, to give the finished surface. The emery wheel used is 12 in. diameter by 1¼ in. face. and is claimed to be the largest employed in a tool of this kind and character. The motor is of 2-hp. capacity, of the air cooled type, and has dustproof bearings adjustable for wear. It is operated by direct current obtained through an extension cord with an attaching plug to fit an ordinary electric light socket. The grinder can also be used as a bench grinder and as a universal grinder.



The 2-Hp. 12-In. Portable Electric Grinder Made by the United States Electrical Tool Company, Cincinnati, Ohio.

Cement Manufacturers Organize.

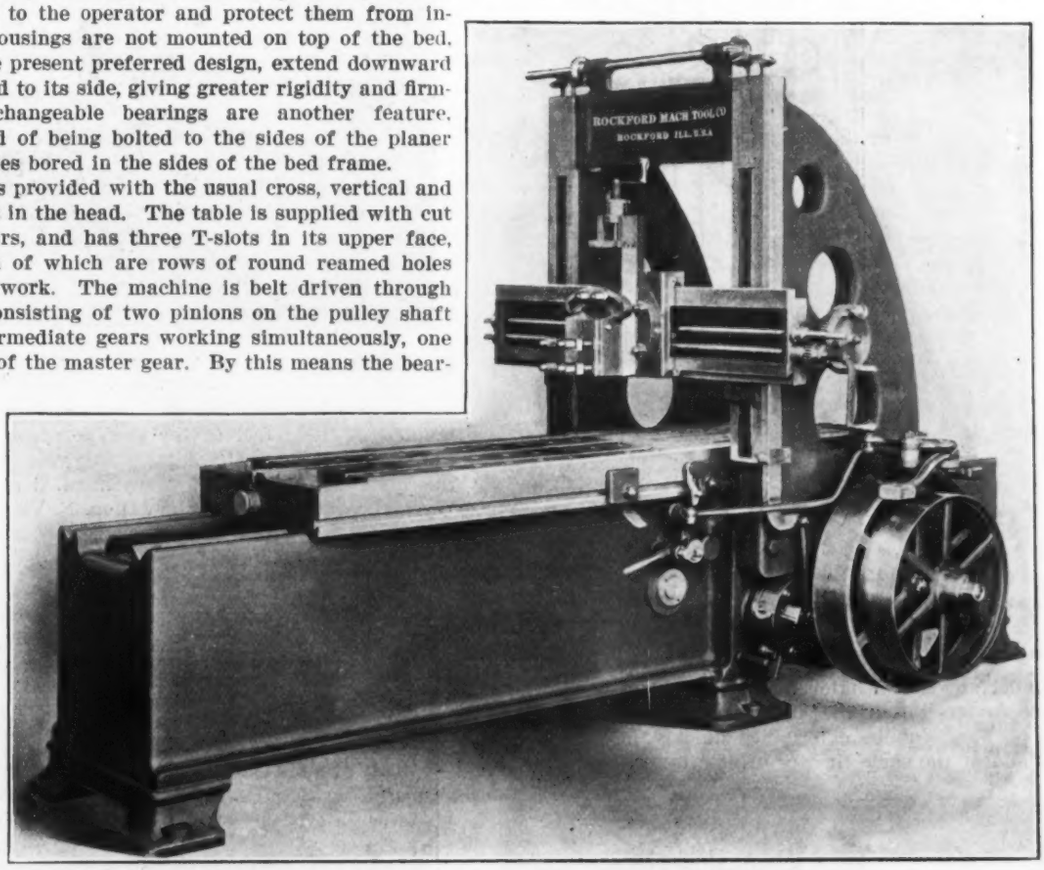
The Association of Licensed Cement Manufacturers was organized in New York January 9 by various important companies in the East and West, all of which have secured licenses under the Hurry and Seaman, Edison, Carpenter, and other patents controlled by the North American Portland Cement Company. The formation of this association terminates protracted patent litigation. A. F. Gerstell, vice-president and general manager of the Alpha Portland Cement Company, is president of the new association; Conrad Miller president of the Dexter Portland Cement Company, is vice-president, and Alfonso De Navarro, vice-president of the Atlas Portland Cement Company, is secretary and general manager.

The purposes of the association include the general betterment of the mechanical and chemical processes used in making cement, the improvement of the quality of cement, dealing with matters of traffic and shipment, and the establishment of an association laboratory for technical tests and experiments. It is understood that all existing and properly equipped cement plants will be granted licenses and admitted to membership. Infringers of the patents above referred to will be rigorously prosecuted. Nearly 70 per cent. of the output of the Portland cement industry in this country is already represented by the association, this being double the annual production in Great Britain, the pioneer Portland cement manufacturing country, equal to the combined output of England and France, and in excess of that of Germany.

The Rockford Planer.

Extending its scope of operations the Rockford Machine Tool Company, Rockford, Ill., whose chief product heretofore has been crank shapers, is bringing out a line of heavy pattern planers, of which the tool here illustrated is the initial machine. More than a year has been spent in developing, perfecting and trying out the planer. While in its general outlines a design common to planer construction has been followed, several features have been introduced which claim attention as departures more or less radical from usual practice. It will be noticed, for instance, that the gears are not exposed, but are located inside of the bed, to secure compactness, remove their menace to the operator and protect them from injury. The housings are not mounted on top of the bed, but, as in the present preferred design, extend downward and are bolted to its side, giving greater rigidity and firmness. Interchangeable bearings are another feature, which instead of being bolted to the sides of the planer are set in holes bored in the sides of the bed frame.

The tool is provided with the usual cross, vertical and angular feeds in the head. The table is supplied with cut rack and gears, and has three T-slots in its upper face, between each of which are rows of round reamed holes for securing work. The machine is belt driven through twin gears consisting of two pinions on the pulley shaft and two intermediate gears working simultaneously, one on each side of the master gear. By this means the bearing surfaces on the most rapid gears and pinions are doubled, with the effect of increasing the power and minimizing wear. A double releasing type of feed friction is used, which, it is claimed, will not wear when operated rapidly, and gives a powerful feed to the tool when taking heavy cuts.



The New Heavy Pattern Planer Built by the Rockford Machine Tool Company, Rockford, Ill.

The planer here illustrated is 24 x 24 in. by 6 ft., and has a cutting speed of 30 ft. per minute, which can be increased, if desired, with a return speed of 95 ft. per minute. A smooth return of the table is effected by a belt shifting device, which shifts one belt ahead of the other. The complete machine weighs 7100 lb.

The Cleveland Foundrymen's Association.—The annual banquet of this society was held at the Hollenden Hotel, on the evening of January 28. W. C. Bruce, the new president of the association, presided. Trade schools were discussed and favored in addresses made by James F. Barker, principal of the new technical high school in Cleveland, and by President Charles S. Howe of the Case School of Applied Science. J. H. Webster, president of the Variety Iron Works, urged that now was the time for foundrymen to return to the 10-hour day. A review of the year's work of the National Founders' Association was made by A. E. McClintock, commissioner of that association, who also spoke of the successful use of molding machines in combating the unjust demands of organized foundry labor. Other short addresses were made by W. D. Sayle, president of the Cleveland Punch & Shear Works Company; L. H. Kittridge, and by J. P. Dawley, attorney for the Cleveland Foundrymen's Association.

The Queen's Run Firebrick Company Expanding.

To meet the constantly increasing demand for its product the Queen's Run Firebrick Company, Lock Haven, Pa., has increased its capital stock from $250,000 to $375,000, for the purpose of building a new plant at Queen's Run, Pa., and is now in the market for the machinery required. The company's present plant at Lock Haven has a capacity of 50,000 hand made brick per day. It is a modern plant, having been entirely rebuilt four years ago. The new plant will be of about the same capacity. Queen's Run is 3 miles west of Lock Haven on the Pennsylvania Railroad. Here the company owns a property consisting of about 5000 acres bordering for 3 miles the north bank of the West Branch of the Susquehanna River. For more than 50 years this territory has been yielding an exceptionally fine quality of high grade fire clay to which is to be attributed the high standard of excellence accorded to Queen's Run fire brick. During the past four or five years the company has extensively and scientifically developed its fire clay deposits so that it is absolutely assured of a supply of both hard and soft clay sufficient for all its requirements for many years.

The main building of the new Queen's Run plant will be 100 x 300 ft., with a machine room extension, a separate building for the power plant, 16 twin kilns, and a storage shed, 60 x 300 ft., with a railroad siding on each side. All the buildings, except the storage shed, will be of steel construction and fireproof. Forty new and substantial houses will be built as homes for employees; also a large boarding house. It is expected that the plans will be completed and contracts let so that building operations may be begun April 1. The equipment of the power plant will consist of two 6 x 16 ft. horizontal tubular boilers, a 200-hp. engine, a 40-hp. engine and 500 light dynamo, feed water heaters, &c. This outfit will not be included in the regular contract.

Storage Racks for Finished Steel.

All metal working concerns have more or less of a stock of bars, wire, plates and shapes, which it is necessary to keep at hand and ready for immediate use. It

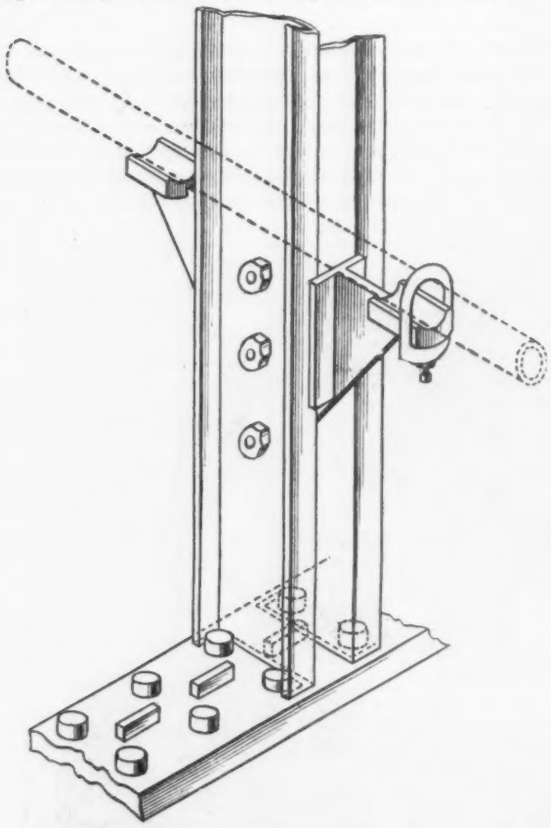


Fig. 1.—The Combination of Floor Plate, Channels and Pipe Bracket Used as a Rack for Coiled Material.

is important that whatever storage system is employed be so designed that the amount of stock of any given size on hand can be determined quickly. To accomplish this and at the same time to utilize the greatest possible

Fig. 2.—Coil Stock on Pipe and Channel Racks.

Fig. 3.—Rack for Extruded Brass Stock.—Brass Links Subdivide Rack Space.

number of cubic feet of the storage space available, is the problem presented. After many years of experience this matter is very satisfactorily handled at the plant of Wyckoff, Seamans & Benedict, Ilion, N. Y., who manufacture the Remington standard typewriter.

The system adopted for storing sheet, bar and coiled

Fig. 4.—Hoist for Putting Heavy Boxes Into Stock.

stock has interesting features. The space on each side of the main center aisle is divided into stalls. Between each pair of stalls two angle irons are fastened to the ceiling, and some special cast iron plates are let into the floor. These plates contain lugs for holding 4-in. channels in place, while in the angle irons holes are punched 3 in. apart, providing for the bolting of the upper ends

of the channels to them. Two channels are placed back to back, and between them at regular intervals suitable bracket castings are bolted. These castings support pieces of 1½ in. extra heavy pipe, which project 3½ ft. on each side. The pipes are fastened to the end of the castings by malleable iron yokes driven on and locked

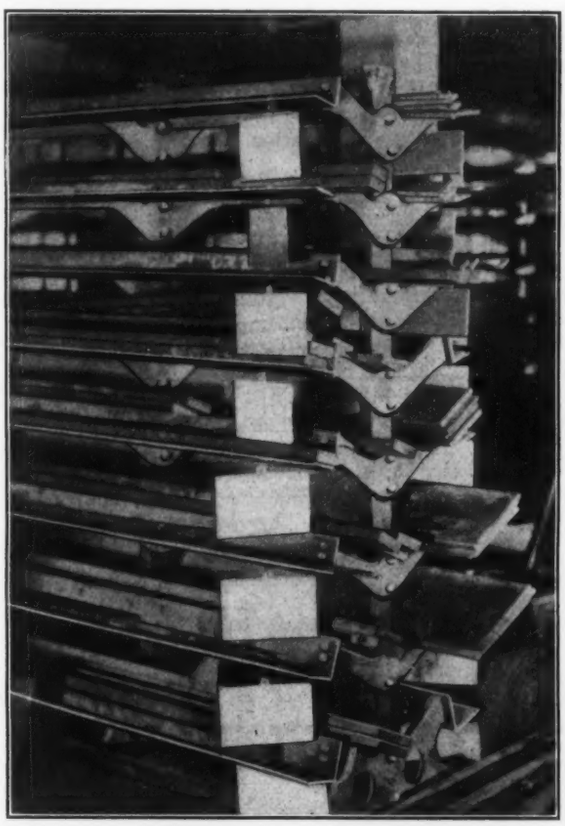


Fig. 5.—Special Rack for Tool Steel, Bar Iron, &c.—An Angle Is Riveted to the End of Each Bracket Arm.

with a set screw. The method of construction is illustrated in Fig. 1.

Coiled stock can be hung on these pipe supports, as shown in Fig. 2, and the pipes themselves can be staggered in such a way as to hang the coils to the best advantage. For dividing the space into bins or compartments for the storage of limited stocks of special bar material, such as extruded brass, the space between two sets of arms may be subdivided by brass links, this arrangement being shown in Fig. 3. A cap is screwed on the outer end of each bar to act as an anchor, preventing bar stock from rolling out over the ends of the supports.

Some of the heavy stock is stored in boxes just as it is received. This device for placing these boxes in the racks is especially noticeable for its convenience. It is shown in Fig. 4. At one end of the racks is an ordinary air hoist, coupled to a cable, which runs continuously over all of the racks. At any point desired a special double hook, carried on a sheave wheel, may be slipped over this cable and then pulled down, and the hook inserted under a box of material which has been run into the space between two racks. The air hoist is controlled by means of a lever, the levers being placed on alternate columns throughout the length of the building. As soon as the hook is placed under the truck the lever is thrown, the hoist takes up the slack cable and raises the box to the desired hight. It is then swung in over the pipe supports, and by reversing the hoist it is lowered to the pipes. This device enables the keeper of

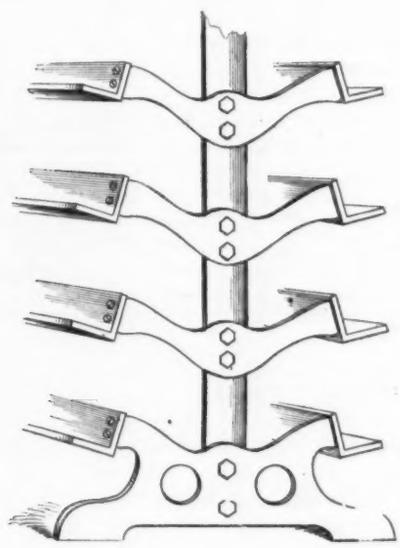


Fig. 6.—End Elevation of Rack for Tool Steel.

the stores to place the heaviest stock at any hight, to the very top of the racks, and utilizes all the space there is. No more men are required for puttinfg the heaviest kind of stock into store than for trucking in and about the factory, and in the case of anything which can be handled with the hook, practically all of the heavy manual labor is cut out.

It will readily be seen that by shifting the channels the pipe supports can be adjusted horizontally; a vertical adjustment is accomplished by shifting the brackets on the channels, hence any desired arrangement of supports can be secured almost at a moment's notice. Very heavy stock is frequently stored on the floor beneath the lowest

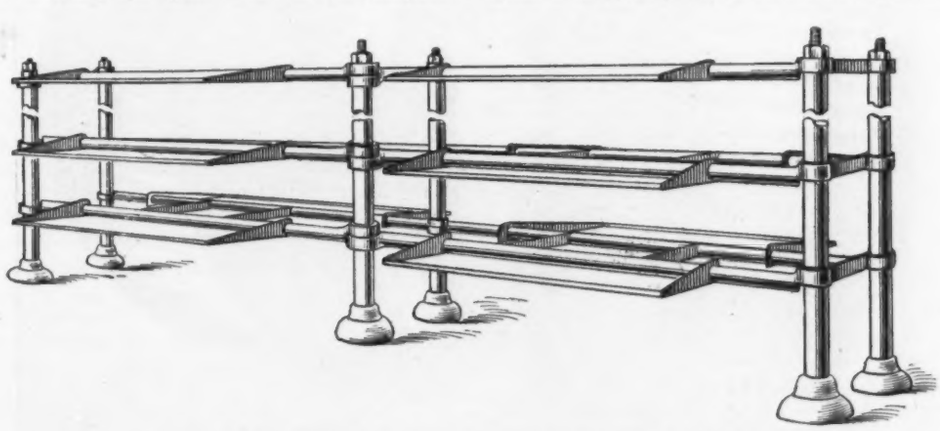


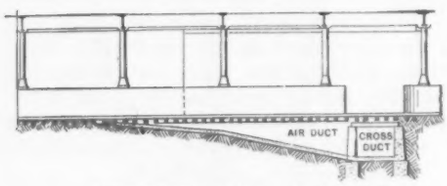
Fig. 7.—Another Style of Rack, with Shelves at the Side for Short Stock.

support. By placing the stock on suitable blocks so that the double pronged hook can be placed under it, the hoist becomes available for loading this stock on trucks.

For the storage of tool steel, bar iron, &c., special racks have been designed. In one style of rack, Figs. 5 and 6, an angle iron is fastened along the entire length of the outside of each shelf to accommodate short stock. In the other style of rack, Fig. 7, which is used mainly for tool steel, a shelf is provided at the side for accommodating short stock. By making it a rule to place all short stock on these outside supports it becomes very easy to take an invoice of the stock on hand. In this factory, however, a bin card record system is employed,

which serves as a perpetual inventory of stock on hand.

A handy method of distinguishing different classes of steel has been adopted. Whenever a shipment of steel is received, before placing in stock it is painted or striped



LONGITUDINAL SECTION OF NOZZLE

with colors which indicate the character of the steel. One grade of tool steel will be painted red the entire length of the bar, another blue, &c. This makes it impossible for any one familiar with the system in vogue to select the wrong brand of steel for any given tool.

The contract for the iron work for the new blast furnace to be erected by the Brier Hill Iron & Coal Company, Youngstown, Ohio, to replace the old stack, has been awarded to the William B. Pollock Company, in the same city.

Ventilation of the Washington Terminal Tunnel.

An especially interesting system of ventilating has been applied in the tunnel leading to the new Union Terminal at Washington, D. C. As steam locomotives are operated through this tunnel it was necessary to provide for removing the gas and smoke left by one train before another enters the tunnel. A large volume of air was therefore required, and the problem was complicated in that the ventilation apparatus had to be placed in a very small space and attain high efficiency at low expenditure of power.

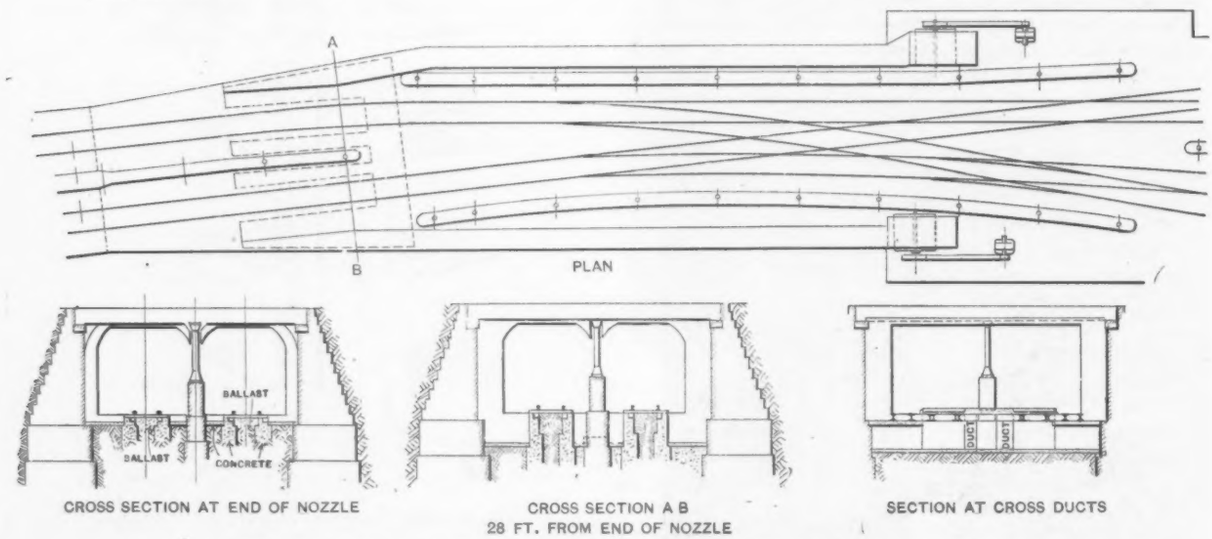


Fig. 1.—Details of the Ventilating Equipment Installed in the Washington Terminal Tunnel.

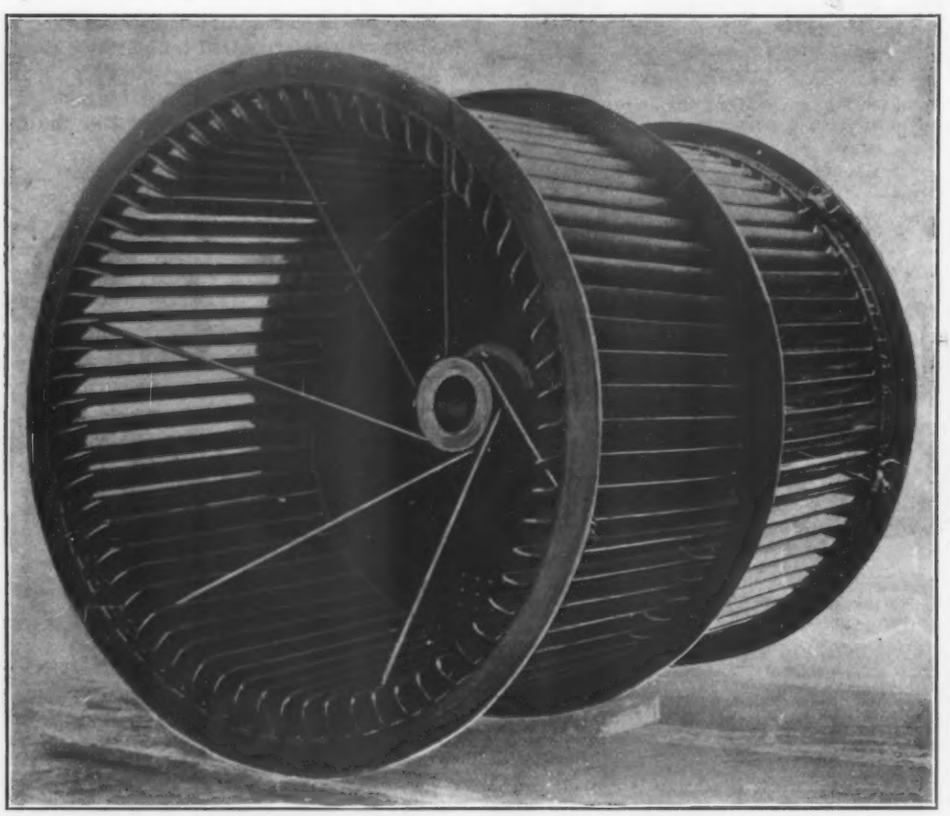


Fig. 2.—The Double-Inlet Sirocco Fan Wheel Used in Ventilating the Washington Terminal Tunnel.

At a point about 300 ft. from the terminal portal were constructed two ventilating ducts, each about 5 ft. wide, which were carried along both side walls of the tunnel to the full hight of about 18 ft., with a cross duct under the tracks, as shown in Fig. 1. The space available for the fans was 18 ft. high by 13 ft. wide. The drawings, Fig. 1, show the layout of the ventilating installation, the location of the fans, with respect to the air ducts, and the emplacement.

The specifications drawn up by the Pennsylvania Railroad Company called for two fans 120 in. in diameter, each capable of delivering 260,000 cu. ft. of air per minute against a pressure of 1½ in. of water. The speed was not to exceed 145 rev. per min., and the power required, 120 hp. The fans are of the Sirocco design, with double inlets, corresponding in dimensions, efficiency, speed and power requirements to the specifications just noted. These fans, driven by electric motors, have now been in use for several weeks, and have satisfactorily performed the duty imposed upon them.

Fans of this design are unique among centrifugal blowers, principally because of the shape, size and number of the blades. It has been found that in all diameters the best results are obtained from 64 blades. It will also be noticed from the view of the wheel, Fig. 2, that the blades are very short radially, being only one-sixteenth of the diameter of the fan. Axially, however, the blades are unusually long, three-fifths of the diameter. The outer edges of the blades are bent forward to a set angle in the direction of rotation, and are very slightly cupped. The inlet and the outlet of the fans are practically equal to the area of the fan itself. The special advantage of the size and shape of the blades is that power absorbing eddies are almost entirely eliminated, and the velocity of the air so greatly accelerated that it actually exceeds the peripheral speed of the blades by as much as 70 per cent. The intake draft of the fan shows practically no variation over its entire area.

For the Washington installation no fan of the ordinary type less than 17 ft. in diameter could be found that would produce the output of air required, and the space available did not permit a fan of this size. In tests of smaller sizes of fans it has been found that a Sirocco centrifugal fan, 30 x 22 x 33 in., delivers 2200 cu. ft. of air per minute more than the fan of ordinary type, 42 x 34 x 39 in. On shipboard, in mines, and in many other installations, this high output, as compared to the space occupied by the fan, is of great importance. The power absorbed by the Sirocco fans is indicated above in the specifications limiting the requirement for a fan capable of delivering 260,000 cu. ft. of air per minute against a 1½-in. pressure to 120 hp.

Heretofore the Sirocco fans have not been manufactured in the United States, but they are now to be made by the Sirocco Engineering Company, New York, of which William C. Redfield, formerly of the J. H. Williams Company, is president; Hugh T. Coulter, for several years manager of the New York branch of the Davidson Company, general manager, and Thomas Brown, chief engineer.

The management of the Alaska-Yukon-Pacific Exposition, which will be held at Seattle, from June 1 to October 15, 1909, has secured the services of Col. Henry E. Dosch of Portland, Ore., as director of the division of exhibits. The exhibits department is being organized, and prospective exhibitors can now receive information in regard to space by applying to Colonel Dosch. Work on the grounds and buildings is progressing. The Manufacturers' Building is well under way and will be the first large exhibit palace finished. It will be about 145 x 445 ft., and, including the galleries, will contain about 80,000 sq. ft. of floor space. Four other large structures—the Auditorium, Fine Arts Palace, Machinery Hall and Agriculture Building—have been started. The grounds are located on the property of the Washington University, a State institution, and after the exposition is over the permanent buildings and others substantially erected will be taken over by the university to be used for educational purposes. The purpose of the exposition is to exploit Alaska and Yukon and the countries bordering on the Pacific Ocean.

About 50 of the former employees of the Stowell Mfg. & Foundry Company, South Milwaukee, Wis., who went on a strike in May, 1906, recently voted to call off the strike, and applied for their positions. Owing to the slackness of work at the present time the company was unable to furnish immediate employment to all of the applicants.

Exports and Imports of Iron and Steel for 1907.

The appearance of the December statistics of our foreign trade, just issued by the Bureau of Statistics of the Department of Commerce and Labor, enables complete figures for the calendar year 1907 to be presented. The report shows that the total value of the exports of iron and steel and manufactures thereof, not including iron ore, for the calendar year was $197,036,781, against $172,555,588 in 1906. The past year, therefore, makes a new high record for our export trade in these lines. The month of December, however, did not compare favorably with the immediately preceding months, as the total for that month was $14,967,869, against $17,051,755 in November and $18,951,198 in October. The exports of commodities for which quantities are given were slightly under those of the previous year, as they aggregate 1,302,525 gross tons, against 1,325,740 tons in the previous year. These exports for December were considerably under those of November. The December figures were 85,999 tons, against 116,308 tons in November, 123,216 tons in October, 115,869 tons in September, 118,944 tons in August and 121,400 tons in July. The following table gives details of the exports of such commodities for December and for the two calendar years 1907 and 1906:

Exports of Iron and Steel.

	December.		Twelve months.	
	Gross tons. 1907.	Gross tons. 1906.	Gross tons. 1907.	Gross tons. 1906.
Pig iron	3,104	8,265	73,844	83,317
Scrap	702	1,140	25,668	11,742
Bar iron	954	4,765	24,190	56,025
Wire rods	173	46	10,653	5,895
Steel Bars	4,616	2,762	74,464	32,077
Billets, blooms, &c	5,160	6,137	79,991	192,616
Hoop, band, &c	1,343	1,036	8,587	5,405
Steel Rails	20,763	31,157	338,906	328,036
Iron sheets and plates	3,962	1,613	40,651	17,054
Steel sheets and plates	5,191	6,165	82,045	93,646
Tin and terne plates	304	580	10,203	12,082
Structural iron and steel	9,401	9,878	138,442	112,555
Wire	13,570	13,192	161,223	174,014
Cut nails	407	456	6,974	7,568
Wire nails	2,504	2,193	42,189	46,237
All other nails, including tacks	379	782	7,664	5,687
Pipes and fittings	13,466	9,709	176,831	141,784
Totals	85,999	99,876	1,302,525	1,325,740

Turning to the imports, it is found that the total, not including ore, reached a valuation of $38,789,992 in the calendar year 1907, against $34,827,132 in 1906. The bulk of these imports was in the early months of 1907, as the figures for December are only $2,049,560. The December total of imports of commodities for which quantities are given was only 20,255 gross tons, against 35,255 tons in November, 21,223 tons in October, 40,682 tons in September, 51,700 tons in August and 75,406 tons in July. The following table shows the details of the imports of these commodities for December and for the calendar years 1907 and 1906:

Imports of Iron and Steel.

	December.		Twelve months.	
	Gross tons. 1907.	Gross tons. 1906.	Gross tons. 1907.	Gross tons. 1906.
Pig iron	10,992	74,412	489,440	379,828
Scrap	1,171	712	27,687	19,091
Bar iron	3,892	4,335	39,746	35,793
Rails	201	288	3,752	4,943
Hoop, band, &c	41	32	1,508	10,231
Billets, bars and steel in forms n.e.s	892	2,198	19,334	21,337
Sheets and plates	231	176	3,748	3,231
Tin and terne plates	1,542	8,043	57,773	56,983
Wire rods	1,270	1,530	17,076	17,799
Structural iron and steel	23	701	2,294	28,573
Totals	20,255	92,427	662,358	577,809

The total imports of iron ore in 1907 were 1,229,168 gross tons, against 1,060,390 tons in 1906 and 845,651 tons in 1905.

Gas Engine Packing Materials.

To make an asbestos packing more pliable and cause it to be pressed more thoroughly into the packing grooves some gas engine makers advise dipping into boiled linseed oil, or even water, before applying it to the cylinder. In many cases this improves the life of a packed joint, but the packing must not be soaked too long or the fibers of asbestos will separate, making the packing useless before it is applied. A coat of flake graphite on one side of the packing enables a cylinder head or valve casing to be removed later without destroying the packing in use; the side of the packing not covered with graphite adheres firmly to the cylinder, while the other side detaches itself easily from the head or valve casing. Special packing materials consisting of asbestos interwoven with wire may prove beneficial in certain cases where a plain packing cannot be made to stand, but they will not serve as a cure of leakage troubles, primarily due to an uneven metal surface. To obtain satisfactory results from any packing, the first requisite is a true surface of the joint to be made tight. Rubber packings in a gas engine can be used only at the open end of a single acting cylinder, where the temperature of the surrounding metal is low enough not to rapidly deteriorate this material. Under no circumstances should packings containing rubber be used in joints in the cylinder or valve casings at the combustion end of the engine.

Rail shipments from Great Britain have not held up in recent years. The total in 1907 was 433,638 tons, as compared with 460,328 tons in 1906, 546,569 tons in 1905, 525,371 tons in 1904 and 604,076 tons in 1903. The Australian demand was good last year, amounting to 100,072 tons, as against 54,649 tons in 1906 and 34,731 tons in 1905, but there was a falling off in exports to India, Canada, South Africa and Argentina. British exports of chairs and metal sleepers for railroad construction have been increasing, the total for 1907 amounting to 91,903 tons, as compared with 73,367 tons in 1906. The principal shipments are to British India, the total taken by that country last year being 44,453 tons.

The Alliance Machine Company's Enlarged Plant.

The additions and improvements to the plant of the Alliance Machine Company, Alliance, Ohio, begun last year, have been completed, and the facilities are now sufficient to manufacture the entire line which the company was organized to engage in six years ago, i. e., electric traveling cranes, rolling mill machinery, steam hammers and hydraulic machinery. Heretofore the building of electric cranes has been largely a specialty to the exclusion of the other products on account of lack of capacity, notwithstanding the large addition made to the plant in 1906. At present it is capable of turning out one traveling crane a day of the average size of 25 tons capacity and a fair output of machinery of the classes before mentioned.

The improvements include a rearrangement in the main building, which now contains the machine, assembling and electrical departments, in close communication with each other, reducing the handling of material. To allow this, one side wall of the original building was removed and a new building erected parallel to it, increasing ground space for the above departments to two acres. Although the building is 218 ft. wide, the difficulty of properly lighting all parts has been very satisfactorily overcome. The two main bays of the building are each 38 ft. high and each is served by a 30-ton traveling crane supplemented by 15-ton high speeds traveling cranes. Jib cranes, and special floor trucks are used in the side and center bays.

Fig. 1.—View in the Main Building of the Alliance Machine Company's Plant at Alliance, Ohio, Showing the Trolley Assembling Floor in the Foreground and Parts of the Machine Shop in the Adjoining Bays and Rear.

In the additional equipment of the machine shop, $100,000 was expended for machine tools of modern type. Most of these are equipped with individual motor drives; a few, however, are belt driven in groups by one motor for each group. In general, the plan has been followed of segregating the planers, lathes, vertical boring mills, horizontal boring machines, milling machines, gear cutters and turret lathes. This is evident to an extent in Fig. 1, which shows the trolley assembling floor with part of the machine shop in the background.

The tool room, shop offices and lavatory are located in the center of the building, where they can be reached from any part of the plant in a minimum average time. One of the main bays and one of the side bays is given over to the assembling department, in which 21 traveling cranes of the average span of 50 ft. can be assembled at the same time and still leave ample space for assembling mill tables, hot beds or other machinery requiring a large floor space. Fig. 2 shows the crane bridge assembling floor.

Although the sides of the plant are largely of ribbed glass and the buildings are quite high, they are comfortably heated by a double fan system delivering a great volume of warm air. Only half of the air is recirculated, the other half of the air being drawn in fresh from outdoors, which keeps the interior well ventilated.

In the power plant a direct connected slow speed engine and generator and 500 hp. of return tubular boilers have been added. The boilers are 25 per cent. longer than the standard of their size and class, with the result that a greatly increased efficiency is secured in their operation. Coal is delivered at the power house so as to be unloaded directly in front of the boilers, either by the dumping of drop bottom cars or shoveling from the cars.

A new fireproof pattern storage building has been built and an up to date system of storing and locating patterns installed. The office building has been enlarged by a two-story addition 30 x 40 ft., to afford more room for the executive, engineering and business offices.

Switches from the Pennsylvania and the Lake Shore & Michigan Southern railroads lead laterally through one end of the building, where loading and unloading can be accomplished with the greatest expedition. Crane girders 120 ft. long have been easily handled to and from cars with the aid of the cranes installed. The shipments average 16 cars weekly. During the time of car shortage, to reduce the number of cars required and to send none out which were not loaded above the minimum weight prescribed by the railroad company, the Alliance Company made a special study of the conditions involved in shipping traveling cranes and devised a system of making up the loads and trains to effect the least waste of car space and capacity. This has been followed out since that time.

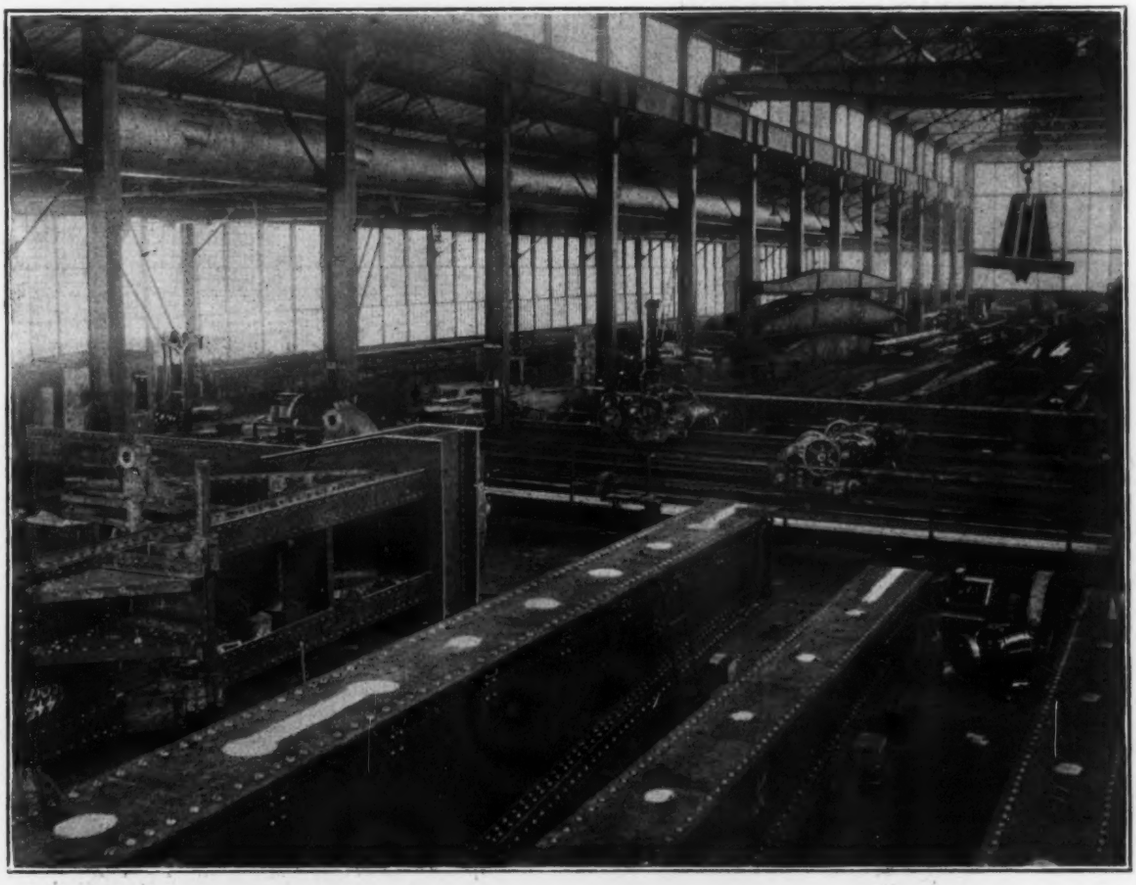


Fig. 2.—The Main Assembling Department in the Alliance Machine Company's Plant, Where the Crane Bridges and Other Large Pieces of Machinery Are Put Together.

The Engineers' Club of Philadelphia.

At the regular meeting of the Engineers' Club of Philadelphia on the evening of February 1, a paper was read by Joseph W. Hunter, Pennsylvania State Highway Commissioner, on "Engineering Problems in Road Construction." The office which he holds was created by an act of Legislature, April 13, 1903. The act appropriated $6,500,000 to be expended in six years in the improvement of State roads. Mr. Hunter's paper deals with some of the difficulties met and overcome by him in organizing and carrying out the stupendous problems he has had to deal with.

The annual election of officers was held January 18, and the officers and directors are now as follows: President, H. W. Spangler; vice-president, W. P. Dallett; vice-president, second, Washington Devereux; vice-president, third, Wm. Easby, Jr.; secretary, H. G. Perring; treasurer, George T. Gwilliam. Directors: J. T. Loomis, Emile G. Perrot, Francis Head, J. W. Ledoux, J. O. Clarke, Henry H. Quimby, Wm. S. Twining, James Christie, H. P. Cochrane, Richard G. Develin, Henry Hess, F. E. Dodge.

Dr. Spangler, the new president, is the first member to have the honor of being twice elected to the office, he having served in that capacity in 1890. He is in charge of the Department of Mechanical Engineering of the University of Pennsylvania.

Pig iron production in Belgium in 1907 was 1,427,640 metric tons, as compared with 1,431,460 tons in 1906. Last year's output was made up as follows: Puddling pig, 226,130 tons; foundry pig, 100,020 tons; steel pig, 1,101,490 tons.

For the Krupp Works at Essen a 4000-ton hydraulic forging press has just been ordered from Davy Brothers, Ltd., Sheffield, England, this firm receiving the contract in competition with German manufacturers.

Recent Improvements in Bury Air Compressors.

BY H. EDSIL BARR.

Air compressors play an important part in industrial economy and are responsible in many cases for the continuous operation of large plants, construction works, &c. For such service the light, slow running and inaccessible machine, built on pump lines, is less suitable than the heavy, rigid compressor designed on steam engine lines and capable of continuous, efficient operation under high pressure and at rapid rotative speed. To reduce the attention, renewals, &c., demanded, the design should embody a liberal use of metal carefully placed, the best materials and workmanship throughout, large wearing surfaces with provisions for copious and uninterrupted lubrication, adjustments on all important bearings of a type easily manipulated by the average operator, metal air valves with removable seats, thorough water jacketing of the air cylinder, particularly the air heads and around valves, a balanced crank shaft and general accessibility.

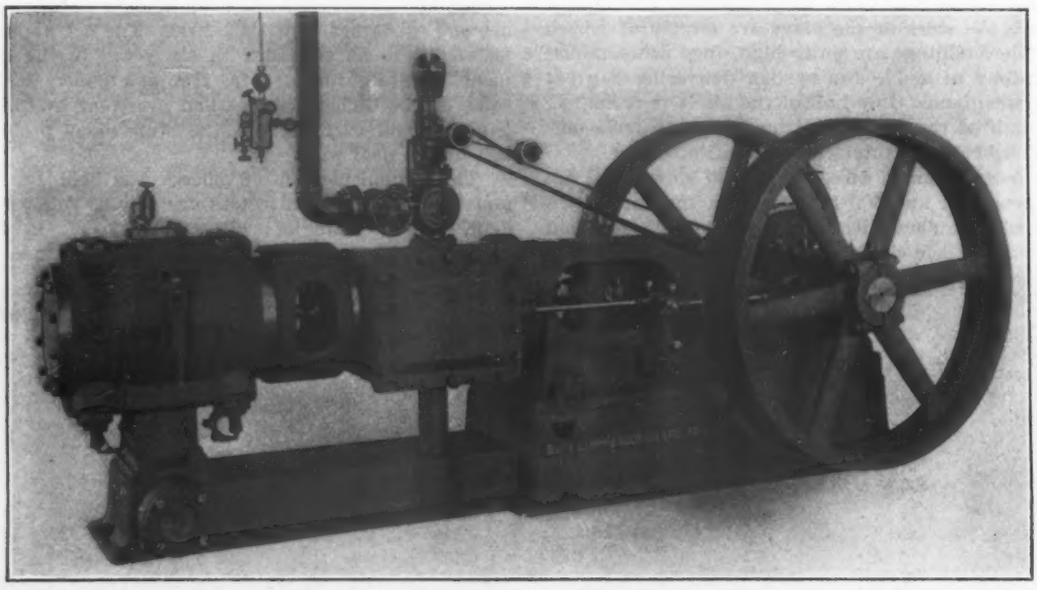


Fig. 1.—The Class B. S. Air Compressor Built by the Bury Compressor Company, Erie, Pa.

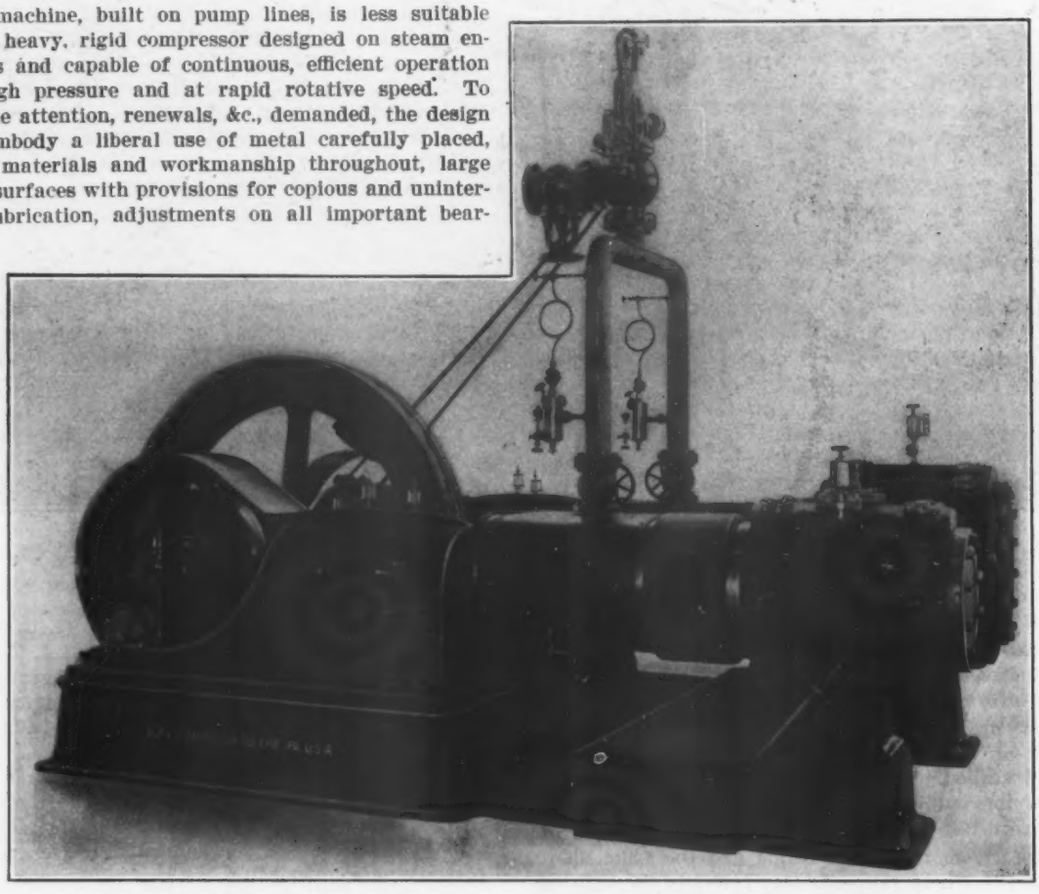


Fig. 2.—The Class C. C. S. Duplex Bury Compressor with Compound Steam and Air Cylinders.

The accompanying Figs. 1 and 2 show recent designs of 12 and 14 in. stroke single and duplex air compressors, built by the Bury Compressor Company, Erie, Pa., in which it has been the aim to incorporate these essential features. The massiveness and rigidity of these machines is apparent. The frames are of the bored guide type, with heavy duty half box bearings, which are tied into the frame body by heavily ribbed, long sweep housings. The air and steam cylinders are held rigidly in line by the circular, internally flanged yoke, which is provided with large side holes for conveniently reaching the stuffing boxes. The machine proper, frame and cylinders, with attached parts, is secured by through and tap bolts to an unusually deep subbase, which on the two-stage machines includes the intercooler, making the entire outfit self-contained, of permanent alignment and adapted to run as satisfactorily on a good timber cribbing as on a more permanent foundation of concrete or brick.

The crank shafts and connecting rods are of forged open hearth steel. The crank of the duplex machines is of the built up type, with balanced disks forced on shaft and held by two keys. The pin is forced in and riveted. The various operations in the building up of this crank are done with a care and precision which makes the completed crank practically as solid and true as if made from one piece. The single crank shaft is slotted from a single forging, the pin and journals are turned with large fillets, and the shaft is fitted with counterweighted disks mounted on the wings of the crank by a special construction, the joints being all machined and no Babbitt or other soft metal likely to loosen from shrinkage used.

The connecting rods have the approved marine crank end and solid crosshead end. The crank end boxes are lined with babbitt and the crosshead boxes are phosphor bronze. All babbitt in the main bearings and connecting rods is poured into dovetailed recesses, after which it is piened thoroughly to overcome shrinkage, and the box is bored to fit the pin or journal. The crosshead is of box form, with adjustable shoes and steel wrist pin drawn in on a continuous taper and securely fastened. The careful construction of all bearings and the methods used to insure perfect alignment make these machines remarkably smooth in operation and of small friction loss.

The steam valve is a balanced, double ported slide type, having very short steam ports, and is well suited to the operation of a compressor or engine, giving economical service with little attention aside from lubrication. The steam cylinders are lagged with asbestos to diminish radiation, and are covered with a heavy polished blue steel jacket. The cranks of the duplex machine are protected by a polished steel guard with heavy angle iron pieces, and the single crank machine may also be so fitted.

The air valves, the vital parts of any compressor, as ordinarily furnished, are of the automatic, direct lift type, with spring closure, operating in guides of a recently improved form, which possess features particularly worthy of attention. The most common form of inlet valve guide is made of brass and screwed into the wall of the cylinder or head. This thread is straight, and, being depended upon to a great extent for tightness, is made a good fit in the tapped hole. The guide is made of brass to prevent its corroding to the cylinder metal in the thread, as it would if it were of iron, but as fully an annoying trouble is experienced by the cylinder oil working in around the thread and becoming carbonized from the heat of compression to an extent which makes it extremely difficult to remove the guide. In some cases which have come under the writer's notice it has been necessary to chip the guide out. Some, knowing the possibility of this trouble, have resorted to removing the guides once a week and cleaning with gasoline. This is effective, but the softer thread of the brass soon wears loose from frequent removal, and few operators will go to this trouble. In fact, often the opportunity is not available.

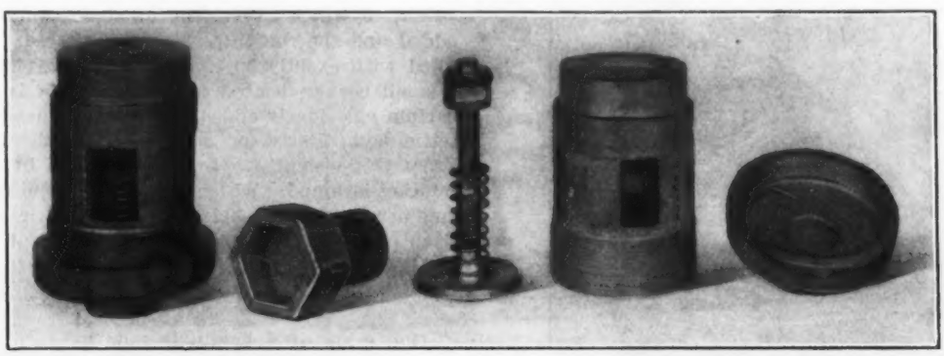


Fig. 3.—The Intake Air Valve, the Wrench for Assembling It, and Its Three Parts Separated.

It becomes advisable, therefore, to avoid the necessity of such attention, and the guide shown in Fig. 3 accomplishes the purpose admirably. The guide and seat are one piece, an iron casting, which screws into the metal of the cylinder in the cool air passage wall only. A little graphite and oil applied when the guide is put in prevent rusting at this point. The portion of the guide entering the cylinder wall is not threaded and is a comparatively free fit, tightness being secured by screwing the guide down on a thin corrugated copper gasket under the shoulder shown. The inside of the guide near the bottom is of hexagonal shape, to be engaged by a special wrench furnished for removing and replacing the guide. The cap, which firmly locks the guide, has a hexagonal projection which fits the same wrench. On the high pressure cylinder of two-stage machines a copper gasket is also placed under the cap, so that the fit in the cylinder is not depended upon for tightness, and the guide can be removed in a fraction of the time ordinarily required.

The discharge valve guide, Fig. 4, screws into the discharge passage wall and rests on a corrugated copper gasket on the cylinder wall. The seat is contained with the guide, avoiding wear on the cylinder, and the seat being removable is readily inspected and the valve ground in without danger of emery entering the cylinder. This is a great improvement over allowing the valve to seat on the cylinder wall, or screwing a separate seat into the cylinder wall. Such a seat persists in working loose under the constant hammering of the valve, and if not noticed at once the thread is destroyed on

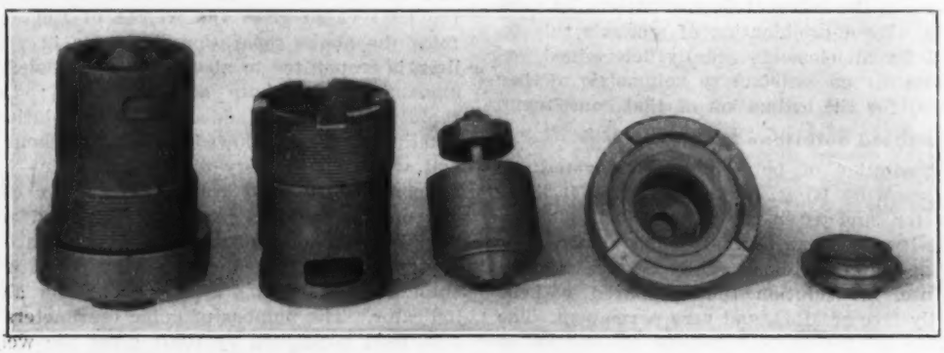


Fig. 4.—The Assembled Discharge Valve and Its Four Parts Before Assembling.

the seat and sometimes in the cylinder. By a simple device the discharge valves are rendered quiet running and very positive in operation.

The positive inlet valves, furnished on special order only, are placed in the cylinder barrel instead of in the heads, as is usual with this type.

The heads are thus entirely free from mechanism, as shown in Fig. 5, have full cooling area, and being much

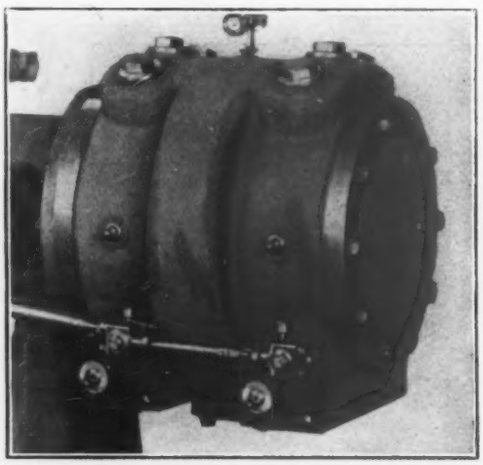


Fig. 5.—The Cylinder of a Class B. S. Compressor with Mechanically Operated Intake Air Valves.

lighter than the usual form are easily removed by one man.

Lubrication is effected by high grade sight feed devices or by force feed or gravity system, as desired.

Rapid Analysis of Dolomite.

BY RANDOLPH BOLLING.*

In blast furnace practice, accurate knowledge of the chemical composition of the flux is important. The composition of each shipment from the quarry must be known in order that proper adjustment of the furnace burden can be made to meet the varying amount of available base contained in the flux and thus keep the chemical composition of the slag well under the control of the superintendent. It often happens in opening up new quarries or from other causes, that blast furnaces receive flux of widely varying composition, and for this reason a sample should be taken from each car. As a single furnace will receive from five to eight cars a day, the rapidity of the analysis of the samples is a matter of some importance. In submitting the following method to blast furnace chemists, it may be stated that the object of the scheme of analysis thus set forth is to avoid the weighing of the several constituents as far as practicable and to make the different determinations by volumetric methods. By a combination of methods this result is reached for all elements usually determined, except silica, as so far no satisfactory volumetric method has been devised for the estimation of that constituent.

Standard Solutions Employed.

A standard solution of potassium permanganate is prepared by dissolving 95 g. of this salt in 30 liters of distilled water, and after the solution has stood a week siphoning it off into an ordinary carboy such as is used in shipping acids, having carefully cleansed the interior before use. A solution thus prepared will be found practically free of MnO_2 and very permanent. The box and packing of the carboy prevent the action of light, especially when the exposed neck is painted with asphaltum paint. The solution can be standardized against chemically pure calcium oxalate, or, which is still better, 0.2 to 0.3 g. of steel drillings, in which the silicon, sulphur, phosphorus, manganese and carbon have been determined and the metallic iron contents accurately known, is weighed into small flasks, usually best to run three, which should check within 0.0002 per cent., solution of the metal being effected in diluted sulphuric acid, 1 to 5. A Bunsen value should present any oxidation of the ferrous sulphate. Permanganate prepared in this way should be almost exactly decinormal, or 1 c. cm., equivalent to 0.0056 metallic iron, or 0.0028 gm. calcium oxide.

Standard Solution Sulphuric Acid.

A carboy is filled with exactly 30 liters of distilled water, to which 210 c. cm. of strong sulphuric acid is added and the contents are well agitated. A pipette is filled with exactly 50 c. cm., and this is transferred to a small beaker, heated to boiling, and a hot solution of barium chloride is added. The precipitate is allowed to settle and filtered on a Gooch crucible and weighed. From this weight the weight of H_2SO_4 in each liter of solution is found. Water is then added to make the volume necessary for a half normal sulphuric acid solution. Each cubic centimeter of this is equivalent to 0.001 gm. of MgO (magnesium oxide).

Method.

One gram of dolomite is now weighed from a well prepared representative sample and mixed with 0.5 g. of anhydrous sodium carbonate in a 30 c. cm. crucible, heated to faint redness over a Bunsen burner and allowed to cool. This treatment decomposes silicates or other minerals insoluble in acids, and after sintering allows of perfect solution in acid. The crucible is placed in a small casserole and about enough hydrochloric acid of 1.10 specific gravity added to cover it and the liquid allowed to evaporate on a water bath of hot plate to dryness. It is redissolved in a little strong hydrochloric acid and then diluted with water and the silica filtered, washed with hot water, ignited in a platinum crucible and weighed. This will be found to be pure SiO_2 and does not require any treatment with hydrofluoric acid. The filtrate is made just alkaline with diluted ammonia and heated to boiling, great care being taken not to get an excess of ammonia, as the magnesium will be precipitated. The iron and aluminum hydrates precipitated are filtered off and washed with hot water, ignited in a platinum crucible, and weighed. One gram of sodium carbonate is added to the oxides and a fusion made over a blast lamp. This fusion is dissolved in diluted hydrochloric acid and reduced with granulated zinc, then titrated with permanganate, the iron calculated to Fe_2O_3 and subtracted from the weight of the combined oxides to find the weight of alumina contained.

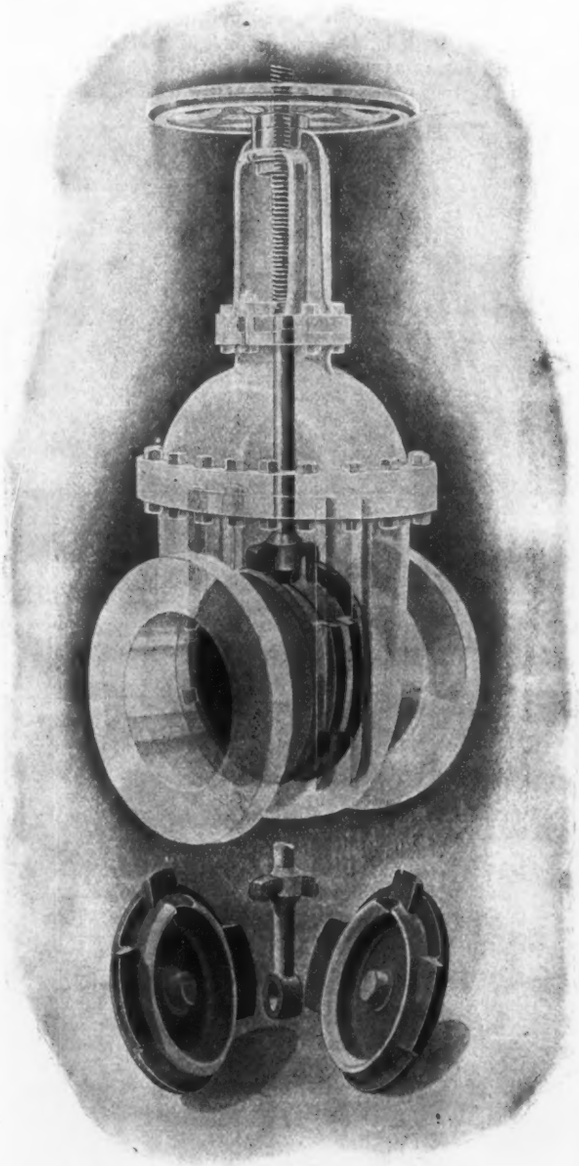
The filtrate from the above separation is heated to boiling in a beaker and the calcium precipitated with a hot saturated solution of ammonium oxalate. After being filtered the precipitate is replaced in the beaker and about 200 c. cm. of hot water is added, with enough diluted sulphuric acid to dissolve all of the calcium oxalate. This is titrated immediately with permanganate and the number of cubic centimeters used multiplied by the CaO value gives the weight of CaO. The filtrate from the above separation, if larger in volume than 1 liter, is evaporated to about this bulk cooled, and sodium ammonium phosphate solution added; then, stirring rapidly, ammonia is added, until the solution is strongly alkaline. This is allowed to stand an hour and filtered and washed with very diluted ammonia—1 part strong ammonia to 20 parts water. The paper containing the ammonia magnesium phosphate is placed on an absorbant plate of plaster of paris in a warm place and as soon as dry is put in a beaker and titrated with half normal sulphuric acid, using methyl orange in alcohol as the indicator. The number of cubic centimeters of standard acid used multiplied by 0.001 gives the weight of magnesia.

* Chief chemist of the Nova Scotia Steel & Coal Company.

The American Tool Works Company, Cincinnati, Ohio, held its annual stockholders' and directors' meeting on January 21. The following officers were elected: Franklin Alter president; J. B. Doan, vice-president and general manager; Robert S. Alter, secretary; Henry Luers, treasurer.

The Best Adjustable Gate Valve.

For high pressure service the patent adjustable gate valve made by the Best Mfg. Company, Pittsburgh, Pa., has certain advantages because of its construction. These center mainly in the adjustable wedge disk shown removed and also in position in the phantom view in the accompanying illustration. It has concave and convex contact on the back which permits equal pressure on the entire face of the disk and insures the valve being



A Phantom View of the Adjustable Gate Valve Made by the Best Mfg. Company, Pittsburgh, Pa., and the Wedge Disks and Holder Removed and Separated.

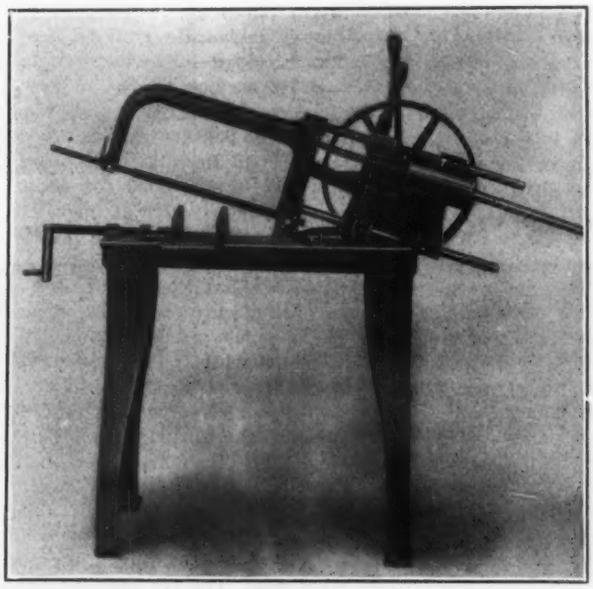
tight when the seat rings are replaced. This can be done without removing the valve from the line, which, with single wedge valves, would be impossible. The wings on the disks are fitted in guides cast in the body, which prevent the disk from sticking in any position or coming in contact with the seat until the valve is intentionally closed. For high pressure steam the stem is usually made of cold rolled steel and the disk holder of cast steel screwed, piened and riveted to the stem. When the stem and disk holder are desired in one piece they are made of bronze or cast steel on special order.

The disks are suspended by the pins on the inner faces, which fit in an eye of the holder. The wings on the sides of the disks travel in guides in the body of the valve to prevent the disks from riding on the valve seats while they are being raised. This feature is aided by the hooks on the disk holder, which engage the lugs on the top of the disks. Since the concave and convex surfaces on the insides of the disks allow them to adjust themselves to extreme conditions, it is not necessary when refacing or replacing the seat that they be in exactly the same position as they were originally. It is in effect a ball and socket bearing directly back of the seating face, and gives the valve an especially strong construction for one of double disk type, without the use of an excess amount of material. A point on which emphasis is laid is that there are no small parts used in the valve, such as wedge pins, rings, &c.

The valve is made either of outside screw pattern, as illustrated, or with an inside screw. The valves in both patterns are made with screw ends, flange ends and hub ends, in sizes ranging from 2 to 48 in. Up to 12 in. the standard patterns are adapted to a working steam pressure of 125 lb. and a working water pressure of 200 lb. For the 14 to 24 in. sizes the working pressures are, respectively, 100 and 150 lb., and for the 26 to 48 in. sizes 75 to 100 lb. Extra heavy patterns are also made for a 275-lb. working steam pressure and a 400-lb. working water pressure.

A New Napier Power Hack Saw.

The power hack saw machine shown in the illustration differs from the usual design in that the parts are concentrated in the head, including the ways and the mechanism for raising the frame. The crank is concealed in the head casting. This distribution of the parts tends toward greater safety of operation, it is claimed, especially in the raising of the frame, which is accomplished by a vertical lever. A feature is the sliding rod in the outer end of the frame, which permits the use of several sizes of hack saws, the rod being drilled at intervals corresponding to standard saw lengths and a pin provided in the frame to engage the desired hole. The frame is deep, so that the machine takes work 6½ in. deep and 5 in. long. It is built by the Napier Saw Machine Works, 119 Liberty street, Springfield, Mass., and is intended to fill the demand for a moderate priced tool of its kind.



A New Power Hack Saw Built by the Napier Saw Machine Works, Springfield, Mass.

At the annual meeting of the stockholders of the Guerber Engineering Company, Bethlehem, Pa., held January 28, the following were elected as members of its Board of Directors: A. N. Cleaver, F. C. Stout, Wm. B. Myers, Chas. M. Dodson, Owen F. Leibert, W. A. Wilbur, Jos. W. Adams, P. A. E. Guerber, J. E. Boatrite. The directors elected the following officers to serve for the ensuing year: President, A. N. Cleaver; vice-president, F. C. Stout; treasurer, Wm. B. Myers; secretary, Franklin H. Brunner; manager, J. E. Boatrite; superintendent, P. A. E. Guerber; superintendent of manufacture, H. R. Walters.

Milling Cutters of High Speed Steel.

At a recent meeting of the Institution of Mechanical Engineers in London, England, Dr. H. T. Ashton of the Royal Arms Factory, Enfield Lock, read a paper on milling cutters. It dealt in part with the difficulties of extending the use of high speed steel to milling cutters of complicated shape, particularly in respect to accurate finish and a good surface, difficulties which, the speaker said, have caused the introduction of high speed steels to be of less benefit to engineers for milling cutters than for any form of cutting tool used. The milling cutter is the most expensive of all the tools used in cutting metals. An important point is the necessity that the cutter have as long a life as possible in actual service, not only to minimize first cost and expense of grinding, but also to keep the output of the machines as continuous and uniform as possible. It was said to be advantageous for obtaining a fine finish to use helical teeth on milling cutters. Hitherto the apparatus employed in sharpening profile cutters for milling machines in repetition work, as in small arms factories, has required skilled labor, but with machines such as those in use at the Enfield factory unskilled labor can be employed, and by standardization of the pitches of the teeth and of their angles the use of these machines has resulted in distinct economy.

The life of some cutters prepared by the methods described in the paper has been extraordinary. One cutter, working in a self- acting, cross milling machine and operating upon the bodies of the service rifle at an average cutting speed of 69 ft. per minute, with a feed of 1¾ in. per minute, and a depth of 0.08 in., and taking a cut of an average width of 1 11-16 in., and ⅞ in. long, has produced 39,170 bodies, and is still good for about half as many more. The steel upon which it operated ran 0.5 to 0.6 per cent. carbon, with an ultimate tensile strength of not less than 35 tons per square inch.

In the discussion it was stated that while with repetition work it pays to make milling cutters of high speed steel, the ordinary shop manager needs to consider whether for his work it is worth while. The experience of Armstrong, Whitworth & Co. was cited as showing that hardening in the open furnace gives as good results as the use of the closed furnace, the important point being the heating, not the cooling. This firm uses high speed cutters for cutting nickel chrome steel at 75 ft. per minute. Attention was called to the fact that high speed steel has guaranteed the high degree of accuracy that makes possible the employment of milling machines where once only planers were used. The requirement has been met that cutters used on pieces that have to be interchangeable should show an amount of wear that is practically negligible.

Valve Grinding.—Inlet and exhaust valves of gas and gasoline engines require occasional grinding to their seats to counteract the destructive effect of the hot gases. The exhaust valve particularly should be taken out and ground about once a month, while the inlet valve, which is not subject to the severe conditions under which the exhaust valve performs its functions, will remain in good working order much longer if the fuel used is properly purified. The exhaust valve if allowed to become leaky will soon burn out, unless attended to promptly. To grind a valve properly requires removing it from the casing. Leaky portions of the seat will be indicated by black oxide points. Both surfaces on the valve and in the casing should be cleaned, and a paste, consisting of a few drops of lubricating oil and a small quantity of fine emery powder, should be applied to the valve seat. Then the valve should be turned to the right and left by means of the most convenient tool, and the valve lifted occasionally to keep grinding material in contact with the surfaces. This operation should be continued until a perfectly even bearing seat is obtained, as indicated by a uniformly dull color of the two surfaces. Before putting the valve together every particle of emery must be removed carefully by washing the valve seat with a cloth saturated with kerosene or gasoline. Neglect of this may cause emery to be drawn into the cylinder and serious damage result.

The Knight Combined Milling and Drilling Machine.

In shops having limited equipment it is especially desirable that each tool cover as wide a range of work as possible with reasonable speed and accuracy. Combination tools, therefore, are often of advantage. Such a machine is the combined milling and drilling machine shown in Fig. 1 and built by the W. B. Knight Machinery Company, 2019 Lucas avenue, St. Louis, Mo. The tool is essentially a drill press equipped with a T-slotted table

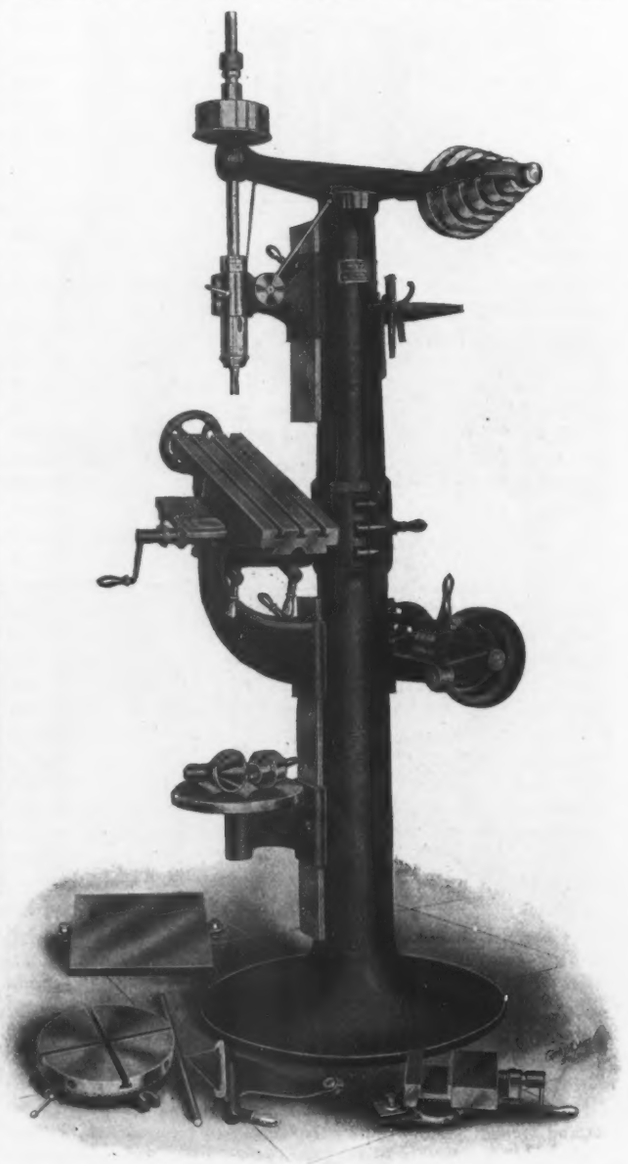


Fig. 1.—A Combined Milling and Drilling Machine Built by the W. B. Knight Machinery Company, St. Louis, Mo.

having a hand operated cross and transverse movement, which adapts it for vertical milling work.

Six speed changes are provided by step cone pulleys, which are driven by tight and loose pulleys, 6½ in. in diameter by 1⅞ in. face. To further increase the versatility of the tool, both in drilling and milling, the table is mounted pivotally on a round arm projecting from the main column and is accurately graduated, so that it can be tilted and set at any desired angle. The feed screws regulating the cross and transverse feeds are provided with graduated collars by which correct table adjustments are secured in laying out and doing work.

The spindle runs in an adjustable taper bronze sleeve and is fitted with a ball bearing end thrust. It contains

a No. 7 Brown & Sharpe taper hole to receive end mill cutters and a drill chuck, the latter having a capacity up to 17-32 in. A vertical movement of 3 in. is provided for the spindle, while the head is capable of adjustment in the same direction through a distance of 8½ in. From the center of the spindle to the column the distance is 7 in. The maximum hight of the chuck above the table, which is 6 x 18 in. in size, is 9½ in. The table has cross and transverse travels of 10 in. and 6 in., respectively. A drill chuck, a fully graduated circular attachment 9 in. in diameter, a graduated vise with 4 in. jaws opening 2¼ in., a drill guide and a drill plate, 10 x 11 in., complete the equipment furnished with the machine.

An idea of the range of work that can be accomplished with this tool is presented in the illustrations showing the application of various attachments and adjustments to different operations. The method of milling a segment die by means of the circular attachment is made clear in Fig. 2, while in Fig. 3 the same combination is shown making a peripheral cut on a circular piece. Fig. 4 shows the table tilted at an angle of 45 degrees for milling a V-groove in a block. A somewhat similar but more delicate operation is shown in Fig. 5, where a die block is being milled with the table slightly tilted to give the proper die clearance. A piece of work not infrequent in shop practice is seen in Fig. 6, while Fig. 7 illustrates how a ring of special shape may be milled on the circular attachment.

By using cutters of special shapes many other forms of dies, cams and pieces of irregular shape can be successfully handled. The drilling of holes in a piece whose surface is not at right angles with the drill is facilitated by using the drill guide, which prevents the point of the drill from running. Also where accuracy is desired, as in the drilling of jigs or templets, or where holes are to be accurately spaced and definitely located with respect to each other, it is claimed that the machine fully meets the requirements of the work. The net weight of the tool is 600 lb.

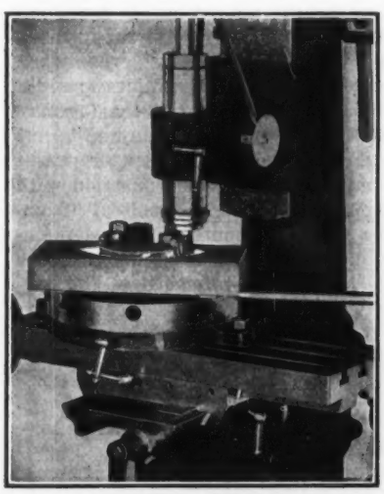


Fig. 2.—Milling a Segment Die on the Circular Attachment.

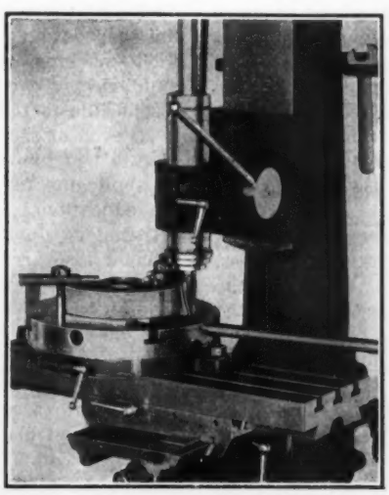


Fig. 3.—Milling the Outside of a Segment on the Circular Attachment.

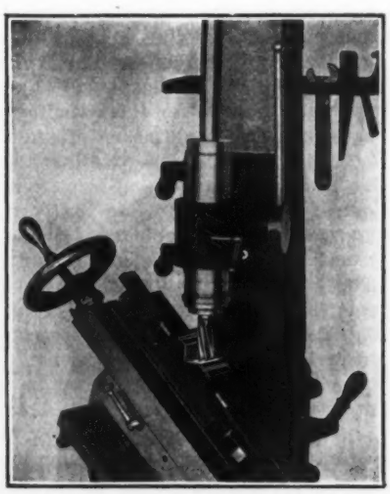


Fig. 4.—Milling a V-Block with the Table Tilted to 45 Degrees.

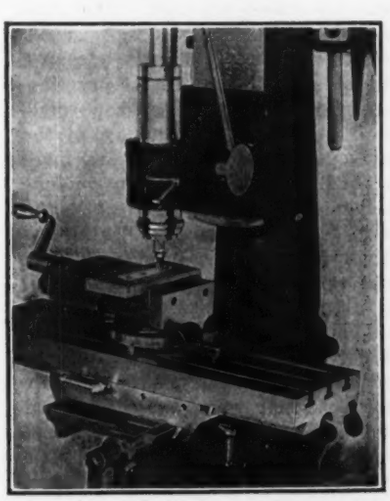


Fig. 5.—Milling a Die Block with the Table Tilted to Give Clearance.

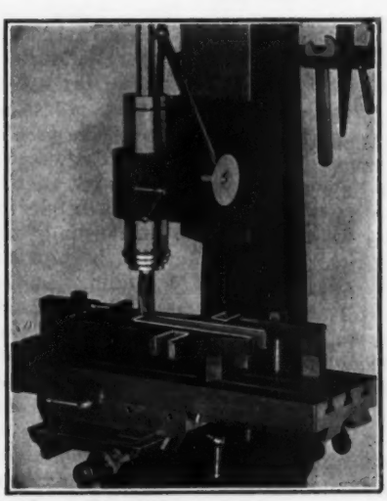


Fig. 6.—Milling the Ways and Face of a Bracket.

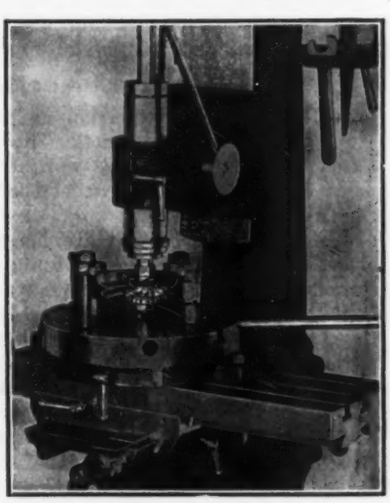


Fig. 7.—Milling a Special Shaped Ring on the Circular Attachment.

TYPICAL OPERATIONS ON THE KNIGHT COMBINED MILLING AND DRILLING MACHINE.

The American Anti-Accident Association.—This society, which has been organized and has its headquarters at Sharpsville, Pa., is now a working body, with a strong force of interested members. The leading workers of the organization, who conduct its practical labors, are on what is called the Committee of Reference. They note and report all conditions dangerous to public safety, and after due investigation the Executive Board seeks to remedy them. The following is a list of the names of the members and their respective duties: A. L. Bartlette, Public Assemblies; James Byerly, Street Traffic; George D. Devitt, Information on Causes of Accidents; Rev. A. H. Heltman, Church and Religious Interests; Charles Hites, Excavations and Underground Work; George Mahany, Athletics and Sports; Andrew Nickle, Current Accidents and Statistics; Mrs. J. J. Pierce, Educational Work; Jonas J. Pierce, Private and Public Construction; Scott Robinson, Manufacturing Industries; James Rickert, Steam and Electric Transportation; Mrs. M. J. Thompson, Domestic Conditions; E. J. Turner, Legislation, Old and New. Descriptive matter relating to the organization will soon be issued for general distribution. Corresponding or associate members are received from any section of the country, so that any one interested in the movement may become affiliated with it.

Industrial Education.*

The Apprentice System of the New York Central Lines.

BY W. B. RUSSELL, NEW YORK.

Efficient apprentice training is expected not alone to raise the grade of mechanics, and to provide from the ranks the necessary leaders and officers, but also to produce ultimately an organization in which men and officers alike can think intelligently, an organization replete with co-operation and efficiency; with its members bound together by association and by training, an organization fully equipped to meet the increased demands of progress and competition. Our large manufactories and railroads are suffering from a lack of knowledge of their men and the possibilities of these men. Large companies are too apt to go outside for their leading employees simply because they have no means of knowing whom they have in their midst capable of filling the important positions. To train an apprentice and not to make use of him when out of his time is to lose the best results of the effort, and yet but few organizations at the present time are prepared to make intelligent use of graduate apprentices. The bright boy is blamed for leaving at or before the completion of his term, but the fault is largely due to the failure of his employer to appreciate his true value and to make further progress possible. A complete and radical change of policy is needed in most organizations to fit them both to attract and to hold apprentices.

The apprentice system as now organized on the New York Central Lines was inaugurated on March 1, 1906, by J. F. Deems, general superintendent of motive power, although evening schools for apprentices had existed for a number of years at several of the shops. The system here described has the hearty approval of both men and management. It has paid for itself from the start, and has not a particle of philanthropy connected with it.

The General Plan.

provides for shop instruction of the apprentice in the trade and for his instruction in educational subjects allied to his trade during working hours while under pay. A shop instructor teaches the trade in the regular shop and on the regular work. As the majority of the apprentices at each shop are machinists, the shop instructor is preferably an all around machinist giving instruction in the machinist trade, but with sufficient knowledge of the other trades, which may have apprentices, to be able to supervise intelligently apprentices in those trades. If the shop is small he gives only a portion of his time, while in a large shop his entire time is taken and he may require assistants.

The educational classes are taught by a second instructor who may be either a draftsman, an advanced mechanic, or a mechanical engineer. His previous education is of less importance than his ability to explain simple shop problems. The ideal instructor is a man who can look at problems from the standpoint of the apprentice, who can work them out with the apprentice, and who can bring himself to realize and appreciate the difficulties as they present themselves. The educational instructor should spend only a part of his time in teaching, and will be able to keep the educational work closer to company practice and himself in line of promotion in the organization if he at the same time retains a position in the shop or in the drafting room. Where the educational work is sufficient to require the full time of one man, an assistant should be provided and both should give part time to the work.

The fact that the shops of the New York Central Lines are widely separated, necessitated the organization of a central department. C. W. Cross, who was the master mechanic of a large division, was appointed as superintendent of apprentices to have general supervision of the work. The educational features were delegated to the author. The central organization was also desirable to procure uniformity of effort and to prevent waste of time and energy on unprofitable experiments. The plan is now in operation at the nine larger shops of the system, and already includes about 500 apprentices. A uniform set of regulations has been adopted showing the classes of work in the shop and the time allotted to each class. These regulations have been made sufficiently flexible to suit the various conditions in different shops, to insure the prompt movement of all apprentices and yet to allow more rapid movement where special merit warrants. Uniform apprentice certificates are issued at the completion of the regular course which entitle the holder to preference in employment at all shops of the system.

The Shop Work.

All of the work done by the apprentices is a part of the shop output. The shop instructor is present to make each machine run at its best efficiency, even when handled by a green apprentice. The apprentices are still responsible to the foreman as formerly, but the foreman is relieved of the necessity of instructing them and is left free to run his department. The shop instructor passes on applicants for apprenticeship, and in connection with the educational instructor recommends dismissal if unsatisfactory during the first six months. The shop instructor also arranges the changes of work in conference with the foreman. He keeps fully informed of the conditions existing in the various departments of the shop; is in close touch with the foreman and gang bosses; knows when and where the stress of work is heaviest, and in making suggestions and recommendations takes these matters into account. His judgment is accepted by the foreman, and his recommendations followed by the shop superintendent.

Class Room Instruction

is largely individual, as the same class may contain apprentices just starting and others nearly out of their time. Educational ideas have been reversed. The work is so arranged that each apprentice may go as rapidly or as slowly as his ability allows. All principles are handled through shop problems and must have practical bearing. Class work is closely adapted to shop conditions. The problems are worded in the language of the shop. The whole scheme of education is simple and more elementary than usual, although it is made to include many principles of mechanics, strength of materials and steam, usually taught in technical schools. Text books cannot be used directly for apprentice instruction even if suitable books could be found, as the average apprentice has a strong aversion to books. One or two books are now available for reference, but the bulk of this material must be in the form of separate sheets, given out one at a time and arranged to advance gradually. The chief features of the educational work are mechanical drawing, which is made the back bone of the course, and shop problems which includes the other branches. The drawing is arranged to start directly on working drawings of actual machine and locomotive parts and yet to advance so gradually that even a dull boy can make headway. No time is taken for pure theory, and skill in drawing lines and making letters is obtained incidentally while making useful drawings. Blue print sketches are used to assist the instructor, but these are drawn so that they cannot be copied and each sketch leaves more or less to be worked out by the apprentice.

Unique Principles of Instruction.

Mathematical problems, as met with in a shop, are not even divided into arithmetic, algebra and geometry, and apprentices often meet problems so mixed in with facts, and so combined in the practical application of natural laws, that in many cases they do not appear to be mathematical problems at all. Shop problems taken indiscriminately from practice and put before apprentices would result in confusion and failure, but it is possible by a careful selection and adaptation to get together problems clothed in every day language, which are practical and useful and which, though actually classified and to some extent graded, do not show the classification. The terms algebra, arithmetic and mathematics are never used, and the sheets are not divided according to subjects. A run-

* Abstract of a paper presented at the New York meeting (December, 1907) of the American Society of Mechanical Engineers.

ning review is maintained by constantly introducing problems on the ground already covered. Interest is further held by varying the standard of difficulty and mixing the easy and the hard problems as they are apt to come in practice. In getting together these problems, all departments of the railroads and many outside sources of information have been utilized. Company drawings, standards, and records, facts and data from the technical press, suggestions from motive power officers, problems directly from the shop and drafting room, hints from instructors and points picked up in conversation with foremen and mechanics have alike been used. Experimental apparatus is being installed in the schoolroom, so that natural laws may be illustrated, but not necessarily proved, as it is the intelligent use of these laws, and not their proof, which is desired. Models and actual machines are used for illustrations. In gearing, the gears are fitted on to a screw cutting lathe in the schoolroom and revolved as a check to the method of figuring them. Locomotive valve setting is introduced by a thorough course in valve setting on a stationary engine located in the schoolroom and arranged to run by compressed air. Lectures are not well suited for apprentice instruction and when used must be short and must take the form of talks or recitations.

Hours and Progress Reports.

Classes are held from 7 to 9 o'clock in the morning, each apprentice reporting for two mornings a week. The apprentices ring in at the shop and then come to classrooms located on the shop property, where they are under shop discipline. At 9 o'clock they report again in the shop. Compulsory evening classes for apprentices have never been entirely satisfactory, but the plan of holding classes during working hours has been used by the British Admiralty for 60 years with entire success. Home work is expected on the problems.

An elaborate system of reports from both instructors is made to the local shop officers, who forward them to the superintendent of apprentices. These reports show, first, the ability at the trade; second, the disposition and personality of the apprentice, and, third, the standing in class work. The instructors are at all times required to know the standing of each apprentice, thus making examinations unnecessary. Special emphasis is placed on the personal touch maintained between the instructor and the apprentice with a view to determining the type of work or branch of service for which the boy is best suited.

Results of the Experiment.

This movement differs from most efforts to better industrial conditions, in that it starts at the bottom, in marked contrast with the common practice of providing special advantages for the especially bright. The rank and file are not touched by special apprenticeship or special courses at high schools. Industrial education must start lower down the scale, and the genius will be the first to profit by the advantages offered. The problems designed for a boilermaker apprentice have been found quite useful with college graduates and the problems used for apprentice classes have been used with equal success in evening classes for foremen, mechanics and inspectors.

Experience has proved the desirability of keeping boys in direct contact with the shops from the very outset. The immediate and direct results of the apprentice system have been increased output (notwithstanding the four hours per week spent in class), less spoiled work, ability to read drawings, to lay out templates and to make sketches, a better grade of apprentices, increased interest in the work, suggestions of apprentices as to improved methods and tools, draftsmen for company drafting rooms and apprentices fitted for special work as needed. Local officials have everywhere been quick to note the benefits of apprentice training, and are unanimously enthusiastic and interested. One immediate result of the opening of the apprentice schools was the request from foremen and mechanics for educational classes of a similar nature, which resulted in the organization of self-supporting evening classes at seven of the shops taught by the apprentice instructors, using practically the same courses of study as provided for apprentices.

In addition to teaching the apprentice a trade and teaching him to think, it is vitally necessary to aid in the development of his moral character and in his loyalty to the right. These objects do not, from their nature, permit of immediate demonstration of success. They are, however, vastly important and the character side of the problem is, in the long run, the larger side. No apprentice plan can possibly succeed if this part of the problem is not uppermost in the minds of those in charge. Neither the employer nor the community has anything to fear from the right-minded, conscientious man who thinks. Much may be feared from one who is not conscientious and right-minded or one who permits others to do his thinking.

The Stevens Seventh Annual Alumni Dinner.

The seventh annual dinner of the alumni of Stevens Institute was held at the Hotel Astor, New York, on the evening of February 4. Some notable addresses were made, among the speakers being President Alex. C. Humphreys, Dr. H. S. Pritchett, president of the Carnegie Foundation for the Advancement of Teaching; Robert P. Porter, formerly chief of the Census Bureau and now the American representative of the London *Times;* Col. George Harvey, James E. Sague of the New York Public Service Commission, Col. Charles W. Fuller, Prof. George V. Wendell, Ernest H. Peabody and H. V. V. Scheel.

President Humphreys discussed certain practical features, which he urged should be included in the curricula of the schools of engineering. While combating R. T. Crane in his attack on technical and technological education and Andrew Carnegie for his support of engineering education, President Humphreys suggested that there was some occasion for criticism of graduates of schools of technology by reason of their being thrust out from the college doors with little or no instruction on the business side of engineering. He particularly pointed out that it should not be left for the engineer student to learn after graduation by bitter experience that his practice as an engineer should be qualified by considerations of commercial limitations, return on investment and the human agencies to be employed. As a whole his address was an appeal for a broader, but, at the same time, a more practical and more specifically thorough education for the engineer-student; the fundamentals of engineering science to be taught with the greatest thoroughness; the ability to analyze data and to correctly reason therefrom to be cultivated rather than the memorizing of data and formula.

Allis-Chalmers Blowing Engines.—The Allis-Chalmers Company, Milwaukee, Wis., in addition to the 12 gas engine driven blowers it is building for the Carnegie Steel Company's Homestead plant and the new works of the Indiana Steel Company at Gary, Ind., has on its erecting floor at West Allis large vertical steam blowing engines for the Wickwire Steel Company, Tonawanda Iron & Steel Company, Pennsylvania Steel Company and Republic Iron & Steel Company. Between 300 and 400 Allis-Chalmers vertical steam driven blowing engines and nearly as many more of the horizontal type are in operation at various iron and steel producing centers of the United States, a fact which will serve to convey some idea of the present magnitude of the industry in which they are used and the demands that it must of necessity make upon the machinery builders of the country for future equipment.

The first meeting of the Gas Power Section of the American Society of Mechanical Engineers will be held on the evening of February 11, in the Engineering Societies' Building at 29 West Thirty-ninth street, New York. The subjects under discussion will be "Experimental Gas Turbines in France" (with lantern slides), "A Simple Continuous Gas Calorimeter," and "A Gas Engine and Producer Guarantee." Other subjects relating to the question of gas power will also be discussed.

The Corrosion of Wrought Iron and Soft Steel Pipes.*

BY T. N. THOMSON.

The physical properties of wrought iron and steel pipes have been brought to my attention during the past few years, and I have spent considerable time trying to determine whether modern soft steel pipe is really superior or inferior to modern wrought iron pipe for heating and plumbing puposes. The matter was originally brought to my attention by the pipe manufacturers, who stated that we are wrong in supposing that steel pipe is less durable than wrought iron pipe. Indeed, they showed me the results of numerous tests which demonstrated that, as far as corrosion is concerned, the life of wrought iron and the life of soft steel are practically the same when the pipes are subject to the same conditions.

I did not doubt the records of these tests at all, but as they were principally laboratory tests I could not consider them as convincing as the condemnation of steel pipe by steam fitters and contractors. Then we tried to investigate along practical lines. I had not gone far when we found that a peculiar condition of affairs exhibited itself, as follows:

General Opinions of Users of Pipe.

A large proportion of the members of the heating trade denounced steel pipe, because, as they said, "It splits, breaks the teeth of the dies and rusts out too quickly." Contractors who would acknowledge that they carried steel pipe in stock a few years ago could scarcely be found; they invariably all supposed they carried only wrought iron pipe.

2. Engineers and architects very freely specified that "wrought iron pipe (not steel pipe) must be used," &c., their impression being that the increased cost of wrought iron pipe over steel pipe was more than compensated for in the greater period of usefulness of the wrought iron pipe over the steel pipe.

3. Instructors in trade schools, professors in colleges, and even the writers of text books were known to emphasize the supposed fact that steel pipe was not so durable as wrought iron pipe, and that the latter should be used in preference to the former, particularly for underground work.

4. On the other hand, statistics showed that the makers of steel pipe furnished about 80 per cent. of all the welded pipe then used in America. I also found that not only had the makers of steel pipe spent millions of dollars in the development of vast plants, but they they had also made a large number of experiments and tests to determine the relative durability of wrought iron and steel pipes, and that their findings invariably were to the effect that the life of these two materials is about the same when they are subject to equal conditions.

5. Wrought iron pipe and steel pipe resemble each other so closely that many engineers, contractors, architects, and even steam fitters themselves, cannot distinguish a difference. I know this to be a fact, for I have tried a number of high class representatives of these several vocations, and they almost all acknowledged that they could not determine the difference unless they were first to cut and thread the pipes; then those pipes which appear most difficult to thread they would christen steel pipes, while those which appear more easy to thread they would call wrought iron pipes. But this process of determining a difference is not reliable, for it is a fact that a man working with sharp and properly designed dies can thread steel pipe almost as easily as he can thread wrought iron pipe. This was demonstrated by a series of tests I made for the International Correspondence Schools in 1905, full records of which can be found in the 1905-1906 proceedings of this society.

One Method of Collecting Information.

As by far the greater part of the every day work of our students in heating and ventilation is principally the manipulation of welded pipes, we considered this subject of sufficient importance to investigate and try to find something absolutely definite regarding the relative corrosion of modern wrought iron and modern mild steel pipes when both are subject to the same actual working conditions as they occur in practice. With this end in view we commenced by quietly circularizing about 300 heating engineers and contractors, offering a book to each in exchange for a small piece of corroded pipe which had been in service only a few years, we to pay express charges at our end. Each circular letter was accompanied by a sheet with printed questions relating to the history of the sample, and was provided with blank spaces for the answers.

My object in trying to obtain these samples and their histories was to find how many were wrought iron and how many were steel. I expected to find that at least 80 per cent. of the samples of corroded pipe sent to me would be steel, but they were not. Of the samples received, only 10 gave out within four years of service, six of these being steel and four being wrought iron. An examination of these samples showed that uniform corrosion took place in both the wrought iron and the steel pipes.

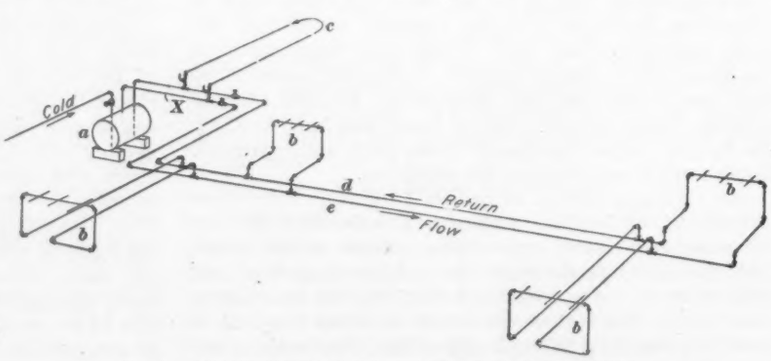


Fig. 1.—Arrangement for Testing Under Service Conditions.

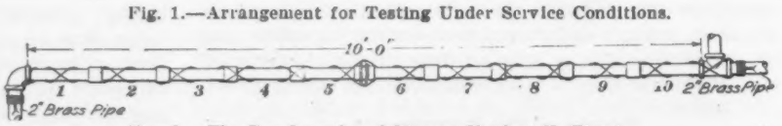


Fig. 2.—The Ten Lengths of Pipe as Used at X, Fig. 1.

Corrosion from Outside.

An excellent example of uniform corrosion of a ⅜-in. black wrought iron underground cold water pipe came from Chicago. It had been in use three years; fully half of the metal was "eaten off" the outside, while the inside was but slightly corroded. There was no pitting present in this sample. Another good example of uniform corrosion was exhibited in a piece of 1½-in. black wrought iron exhaust pipe from power boilers in Tonawanda, N. Y. This had lain in damp soil and ashes four years before giving out. The thickness of this pipe varied from about one-half the original thickness to tissue paper thickness, but no pitting was present. The corrosion was chiefly external, and no doubt was due to the moisture and the ashes. But a better example of uniform corrosion was found in a piece of 2-in. steel pipe from Boston. This pipe was used as a wet return for a direct radiation low pressure heating system, the pressure never exceeding 3 lb. This pipe was put in Febuary, 1904, and was removed March, 1905. The pipe was run on top of a cement floor, over which was a plank floor on which coal was stored. Some of this coal worked down through the wood floor, so that the pipe was partially buried in coal. After each heavy rain some surface water would leak through into the coal bin, so that it is probable the coal around the pipe was continually moist. The pipe was not covered with pipe covering. The corrosion was all external. The inner surface was not corroded in the least.

Three galvanized nipples were received from one party in Newark, N. J. They were reported to have been all taken from the same pipe line, which was used

* Paper, substantially in full, read before the American Society of Heating and Ventilating Engineers, at its January meeting in New York City.

for hot water circulation between a tank and a heater for a house supply of hot water. Two of these nipples were wrought iron and one was steel. They were all pitted to about the same extent.

Deductions from Samples of Pipe.

A study of the samples received from the trade would lead me to assume that (1) both wrought iron and steel pipes which convey steam or hot water will corrode very rapidly when buried underground in wet or damp soil or ashes, the corrosion being principally external; (2) both wrought iron and steel pipes which convey hot water become rapidly corroded if the air and other gases naturally solvent in the water are not permitted to escape from the water previous to its passage through the pipes, as in feed water heater connections and hot water circulation pipes for plumbing purposes, this corrosion being principally internal if the pipes are not buried underground. (3) That the life of either wrought iron or steel pipes subject to both of the aforesaid conditions will be much shorter than if the pipes are subject to only one of them, because the metal will thus become rapidly corroded at both the internal and external surfaces. (I received no samples which show this, neither have I made tests to prove it, but it seems rational to form this opinion at present.) (4) It is not a fact that the destruction of wrought iron pipes is in the form of a uniform corrosion, while the destruction of steel pipes is

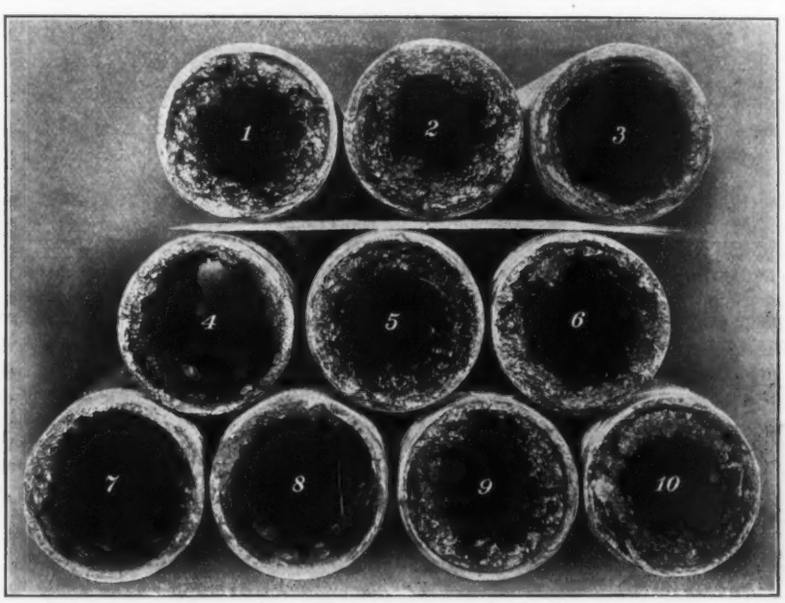


Fig 3.—Rust Formation in Different Pipes.

in the form of pitting; they appear to be on an average nearly alike, with the difference, if any, in favor of steel. Of course no definite conclusion can be drawn from the study of a number of pieces of corroded pipes received from different parts of the country further than the facts we can see in the samples themselves; for instance, the finest sample of uniform corrosion I received was mild steel. It came from Milwaukee, is ¾-in. black steel pipe and is reported to have been used "for heating water in a range boiler for domestic purposes." It was in use two years. The corrosion is practically uniform without a sign of pitting. Part of the original thickness of the metal was corroded from the inside and about two-thirds from the outside. The pipe, which, no doubt, was originally standard weight, is now about 1-16 in. thick at its thickest part and tapers down to tissue paper thinness in several places.

To secure a record of facts regarding the period of usefulness of steel pipe as compared with wrought iron pipe it is necessary to test a large number of samples of both steel and iron pipes subject to exactly the same conditions, and these conditions must be the same as the conditions of practice.

Comparative Tests Under Service Conditions.

On March 7, 1906, I installed a number of pieces of wrought iron and steel pipe for a corrosion test at the ceiling of the engine room in the Instruction Building of the International Correspondence Schools in Scranton, Pa., with the object of determining definitely whether steel pipe will last as long, or longer, than wrought iron pipe, and by how much. The existing conditions were as follows:

A 100-gal. galvanized iron boiler, *a*, in the engine room, is set horizontally on two cast iron cradles supported on brick piers, as indicated in Fig. 1. This boiler furnishes hot water to 24 combination cocks at four pressroom sinks, as at *b*, and four slop sinks, *c*. The water is heated by a 1-in. brass steam coil inside the boiler. The water comes from our city mains and has a working pressure varying from 85 to 135 lb. per square inch by the gauge. An analysis of the city water made while the pipes were under test was as follows:

TABLE OF ANALYSIS OF WATER.

	Parts per million.
CO_2 and Organic matter	29.33
Silica	4.00
Iron oxide	0.43
Alumina	0.37
Calcium carbonate	4.82
Magnesium	Trace.
Sulphur trioxide	Trace.
Sodium chloride	0.82

This may be classed as ordinary good water and should not affect iron or steel pipes in any extraordinary way.

The water on being heated in the boiler *a* circulates between the boiler and the sink cocks to insure hot water being drawn instantly when a cock is opened. The circulation is from the top of the boiler up through the flow pipe *e* and back through the return pipe *d* to become reheated in the boiler. These pipe lines are all composed of annealed brass pipe tinned both outside and inside and connected with heavy cast brass beaded fittings. A piece of 2-in. pipe 10 ft. long was removed at *x* and replaced with 10 short pieces of 2-in. iron pipe screwed together as shown in Fig. 2.

The temperature of the water as it flows through this pipe varies presumably from about 160 to 212 degrees, and the supply of hot water is maintained day and night all the year around. Owing to the fact that these iron samples were connected to brass pipes, and also because a large number of presses and other printing and bookbinding machinery driven by individual electric motors are used in this building, we wired and cross wired the pipes with copper wire, as shown, connecting the ends with perfect contacts to the brass pipes. This was done under advice from electrical experts to carry any stray current around the samples and thus avoid decomposition. It was thought this precaution would insure a corrosion that would be due to nothing but the ordinary action of the hot water on each sample, and that no sample would be favored in any way. The samples were installed March 7, 1906; were removed March 14, 1907, and were in constant service during that time.

Loss by Weight of Test Specimens.

As soon as they were removed and separated, the ends were photographed (see Fig. 3) to show the rust formation and its thickness. The velocity of the water through the samples was always low; it never was high enough to wash out or dislodge the rust, which, therefore, formed a fairly uniform lining about ⅜ in. thick in the black samples. The galvanized samples were not affected this way: they corroded only in spots, which, presumably, were imperfections in the galvanizing.

Before installing the samples we weighed each one separately without the couplings, so that after the rust was all washed out and the samples weighed again the difference in weight indicated the total weight of metal lost by corrosion. Here we found that in the plain pipes 9 13-32 lb. of wrought iron lost 20¾ ounces, while

9 11-32 lb. of steel lost 24⅞ ounces. (The galvanized samples are not included here because the zinc coating affects their durability.)

Pitting Not Corrosion Important.

This is where we are tempted to stop short and conclude that as the steel pipe in this test has lost more metal than the wrought iron pipe, it follows that the wrought iron pipe is the more durable. But such a conclusion would be misleading and absurd in the extreme, because the life of a pipe depends not upon the amount of the corrosion, but upon the deepest pitting. A certain pipe may lose only 1 per cent. of its weight by corrosion when it begins to leak from some pittings, while another pipe may have lost 50 per cent. of its weight by corrosion and still be perfectly tight and serviceable. Therefore, it appears evident that in order to determine the relative life of the samples it is necessary to measure the depth of the pittings and base conclusions on these measurements.

With this end in view, we sawed open each sample lengthwise; then an expert in micrometer measurements, a toolmaker accustomed to very fine work, was detailed to measure the depth of the five deepest pittings in each half, making 100 micrometer measurements. It really was only necessary to measure the deepest pitting in each piece, but to locate it by the eye was impossible. By selecting the five which appeared to be the deepest, however, we felt sure that we measured the deepest pitting in each piece. The thickness of the metal under each pitting was first measured by Starrett transfer calipers having sharp points; then a very delicate inside caliper was used to just touch the points of the transfer caliper, and the distance between the points of the inside caliper was measured with a 1-in. micrometer. Each pitting was measured in the same way and by the same person. The measurements recorded here are believed to be correct to within 1-1000 in.

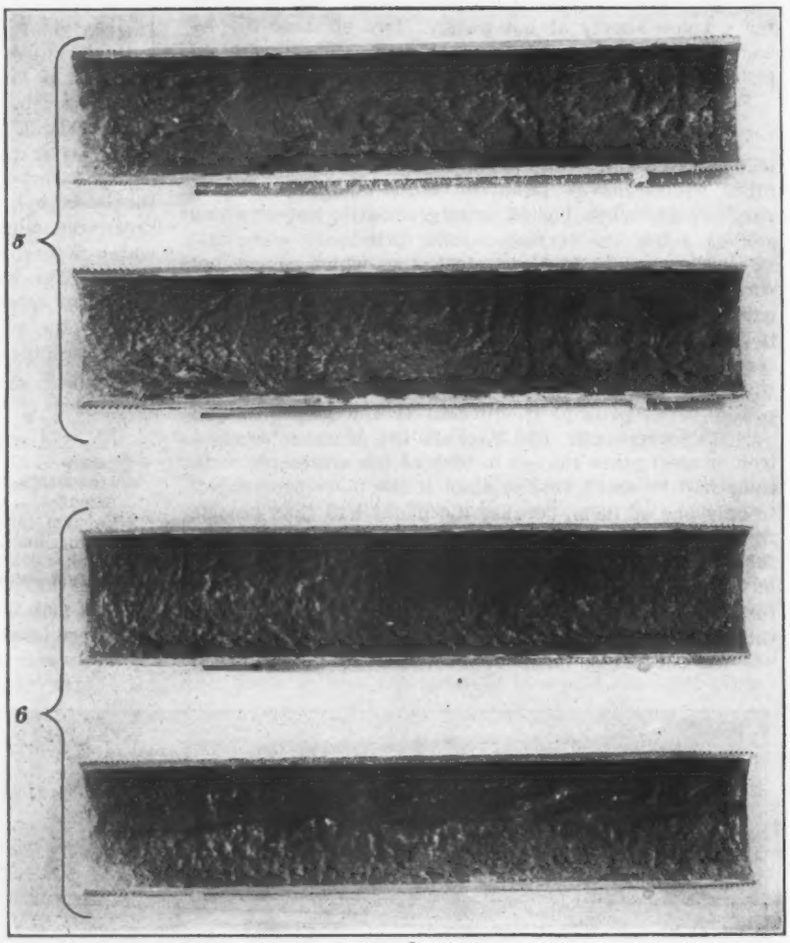


Fig. 4.—Sections of Pipe: 5, Wrought Iron, 780.5 Days; 6, Steel, 780.5 Days.

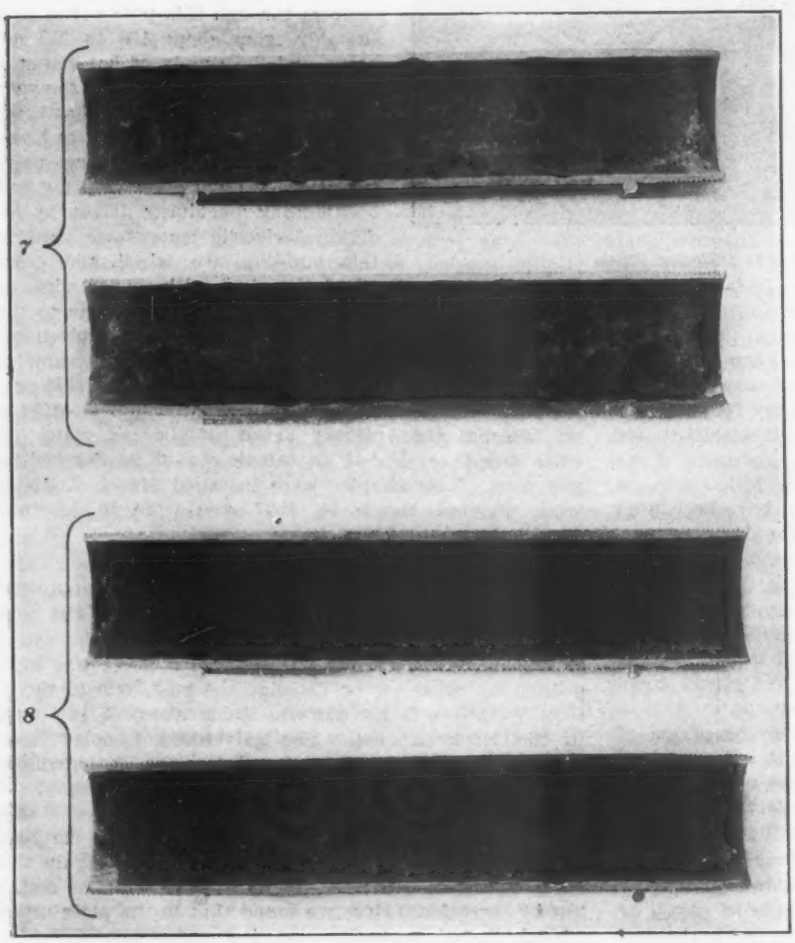


Fig. 5.—Galvanized Pipe: 7, Wrought Iron, 770 Days; 8, Steel. 1162.9 Days.

Figs. 4 and 5 are from photos of some of the samples after they were cut in halves. A close examination will show quite a difference between the corrosion of the steel and the iron.

Summary.

Assuming that corrosion had been continued at the rate which existed during the period of the test, then the different samples would have become corroded through at the end of the number of days given in the accompanying Table II:

DURABILITY OF THE SAMPLES.

Plain Pipe.	Days.
No. 10. Steel pipe	850.4
No. 5. Wrought iron pipe	780.5
No. 6. Steel pipe	780.5
No. 2. Steel pipe	759.7
No. 9. Wrought iron pipe	759.7
No. 1. Wrought iron pipe	686.5
Galvanized Pipe.	
No. 8. Steel pipe	1,162.9
No. 3. Wrought iron pipe	1,162.9
No. 7. Wrought iron pipe	770.0
No. 4. Steel pipe	619.3

The average life of the plain steel pipe samples is 796.9 days, while the average life of the wrought iron samples is 742.2 days, making a difference of 54.7 days in favor of steel. Therefore, a rational deduction to draw from the preceding facts is that plain steel

pipe is more durable than plain wrought iron pipe when used to convey hot water and subject only to internal corrosion. I know that the above summary is not in perfect harmony with the opinions of many engineers and contractors, but I can only record the facts as they are found. I have brought the samples here for inspection and checking if you so desire. If any errors can be discovered either in the method of making the test, obtaining the date, or in the deduction, I shall be pleased to know them.

The New Du Bois Electric Pump.

Electrically driven pumps have many advantages, and for some work are considered more desirable and convenient than steam pumps. This particularly applies where long transmissions of steam would be required and pro-

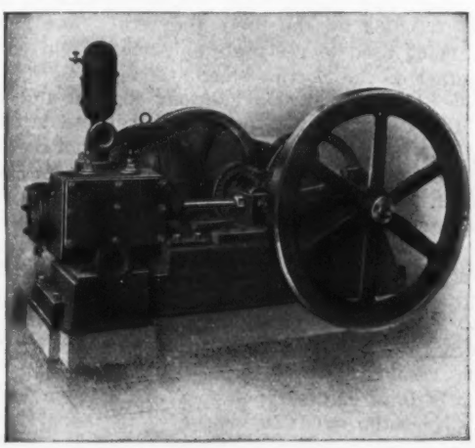


Fig. 1.—A New Motor Driven Pump Built by the Du Bois Iron Works, Du Bois, Pa.

hibitive losses would result from condensation. A motor driven pump can be placed at any distance from the power source and operated with excellent efficiency, as the motor can be operated by either alternating or direct current.

The pump illustrated is simple in design and is driven by the motor through spur gearing. The outfit, two views of which are shown in Figs. 1 and 2, is made by the Du Bois Iron Works, Du Bois, Pa. To give perfect alignment

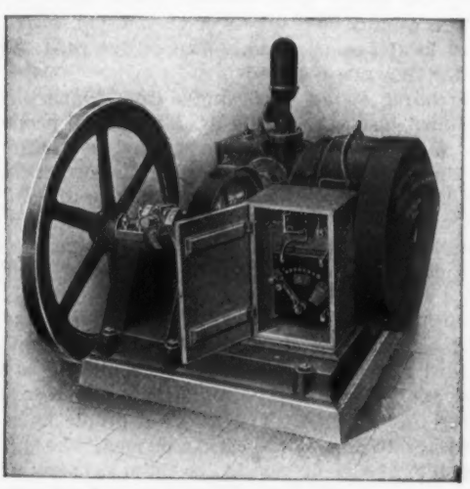


Fig. 2.—End View of the Pump, Showing the Motor Controller.

between the pump and motor, they are mounted on a cast iron base giving a substantial foundation to the main bearings that carry the crank shaft for the balance wheel and main driving gear. The water cylinder used is of the manufacturer's standard type, with all parts readily accessible for inspection.

On the end of the motor shaft is fitted a cut brass pinion, which meshes with the large gear on the intermediate shaft. On the latter is another pinion, which engages the main driving gear on the crank shaft. By this arrangement the proper ratio of speed is secured between the motor and pump for practicability and economy in operation. All gears are protected by heavy iron shields, which can be readily removed when necessary.

The crankshaft is a solid steel forging and the bearings are of babbitt provided with grease cups, which afford continuous lubrication and require but little attention. The connecting rod is forged steel; the cross head end is bored for a bronze bushing, and the crank end is fitted with a bronze box and babbitted. The cross head is cast iron and is designed with broad bearing surfaces and provided with an individual oiler, so that friction at this point is minimized.

DuBois electrically driven outfits can be supplied with constant or variable speed motors of the open or enclosed type. For special mine pumping outfits and where there is considerable dampness, the enclosed motor is used, as it affords complete protection to the armature. The starting device includes a regulating rheostat and a switch for the motor, and is compactly arranged behind the motor, as shown in Fig. 2. It is fully enclosed in a box so that the entire outfit is self-contained and ready for service wherever placed, by simply connecting the electric feed wires, and the pipe connections for the suction and discharge.

A Modern Hardware Factory.

A notable example of the application of the induction motor drive to the solving of power problems in a modern manufacturing establishment is found in the factory of the O. M. Edwards Company, Syracuse, N. Y. This company is an extensive manufacturer of hardware specialties used in both the steam and electric railroad trade, such as window and extension platform trap door fixtures, steel window sash, molding, &c. Formerly the company purchased power from the Syracuse Lighting Company, using 500-volt direct current motors for driving the wood and metal working machinery. It was so well satisfied with electric motor drive that when its factory was enlarged an isolated alternating current plant was installed, together with a complete induction motor equipment.

The generating equipment consists of a Sweet straight line engine directly connected to a 220-volt, 70-kw., 60-cycle, three-phase generator of the revolving field type, built by the General Electric Company, Schenectady, N. Y. The same generator supplies the incandescent lighting.

The motors are of the standard General Electric squirrel cage type, the total capacity installed being a little over 100 hp. The machinery is group driven by motors suspended on platforms from the ceiling. In each shop room the machines are assembled in four groups, a motor in each corner of the room driving a separate line shaft, from which the machines are belt driven. Starting compensators are placed conveniently near the motors.

This factory is modern in every respect. Special attention has been given to the arrangement of machines, with the result that a minimum of time is lost between the different stages in the manufacture of the product. The wiring is all conduit work and adds considerably to the finished appearance of the interior. The entire electrical equipment has been in operation continuously 11 hr. per day for over a year, and it is stated that no operating troubles have been experienced.

A Tidal Power Plant.—A newspaper report from Portland, Maine, states that Alfred S. Black, Rockland, Maine, and associates, have bonded both sides of Back Bay, near Portland, with the intention of establishing a tidal power plant capable of developing 25,000 hp. An experimental station at Thomaston, Maine, has been in operation for several years, after designs by William O. Webber, a mechanical engineer of Boston, whose name has been identified with a number of important power projects. The projectors of the plan propose first to establish a 4000-hp. plant at Thomaston, to furnish power to Rockland. The announcement includes the statement that ample capital has been assured by New York interests.

Freight Claims and Overcharges.

BY R. L. ARDREY.

Probably nothing in the whole business world to-day causes more trouble and dissatisfaction than the settlement of freight claims and overcharges. This trouble has been increasing in recent years. Loss and damage and mistakes in rates naturally increase more rapidly than the volume of business, and some of the most progressive railroads show more than a fourfold increase in the past 10 years. Many large systems receive more than 1000 freight claims a day, and many of them have accumulations of more than 50,000 unsettled claims. The average of damage and overcharge claims is about one claim to three cars of freight hauled over a system. Some of the best roads require an average of 60 days to settle a claim after it is received.

Leading railroad men are looking for light on this question. They realize that a congested claim department is a dangerous adjunct of a road, doing more, perhaps, than anything else to promote ill will and legislation. The writer has spent considerable time with leading railroad officials and claim agents, investigating the possibilities of improvement, and suggestions that are offered by these railroad men may be of interest to the shipper who has not given up hope.

Delivering Agent Should Correct Overcharges.

Claim agents and traffic officials agree that overcharges and mistakes in rates should be kept out of the claim department. The delivering agent of the road should be responsible, and should either correct the expense bill before payment or refund the overcharge promptly to the consignee. Where the shipment originates on the delivering road, the agent should have the tariff and make the correction before payment. If it has come from a connecting line, a delivering agent must, of course, have the authority of the other road, if the overcharge is in its advance charges. There is no reason why this authority should not be obtained in a few days, unless the shipment has come a long way, or several roads have participated in the haul. At present, owing to the lax methods of some roads in handling the billing on through shipments which pass over several lines, there are cases where it requires a tedious investigation to locate the mistake and get it corrected. These cases are rare, however, and the delivering agent should be held strictly to account on all ordinary overcharges.

Loss or Damage Claims.

In the good old days when railroads had to make use of every pretext to delay the payment of their small bills, the custom became pretty firmly established of paying loss or damage claims only where it was necessary to obtain the patronage of the shipper or to avoid a lawsuit. Industry in the claim department was exerted only in inventing excuses and methods of tiring out the claimant who was too persistent. It is difficult to change a long established custom. The leading railroads have become prosperous in the past 10 years, and it is no longer necessary for them to dodge their small creditors, but the old custom still lingers in the claim department of many great railroads, and the progressive vice-president who undertakes to reform his road finds it an almost impossible task. The work is so tedious that 100 clerks in a claim department can make but little progress in struggling with an incubus of 50,000 or more of accumulated claims. It is almost impossible to get competent men for the work. The claim department offers little or no opportunity for advancement, and men who want to get on in the world shun it as they would a cemetery or a job as janitor.

Paying Claims on Presentation.

Several Western roads, in an effort to overcome this difficulty and lessen the growing volume of complaints from shippers, have adopted the plan of paying claims "on presentation," when presented by responsible shippers. They of course require that the shipper shall present as complete evidence as possible, including the paid expense bill, with notation by the delivering agent admitting the shortage or damage, together with the report of the consignee and the invoice, or a copy of it. If subsequent investigation shows that the road was not responsible, the shipper who works under this plan must refund the amount paid him.

The Burlington Railroad, which has adopted this plan of paying on presentation, requires a bond from the shipper in which he agrees to refund the amount paid if investigation shows that the road should not have paid it. The Rock Island Lines have also adopted this plan, but do not require any bond, exercising discretion in extending the plan only to shippers who are responsible and whose record shows that they do not present unfounded claims. The Northwestern does offer to pay on presentation, but its claim department shows the high record of paying about 50 per cent. of all local damage claims the day they are received. Local claims represent about half of the total number of loss or damage claims handled by the road, the term "local" in this sense being used to designate shipments from one point to another on the Northwestern system.

The St. Paul Railroad has long enjoyed among shippers the reputation of paying "on presentation," although, in fact, it does not do so. It does not require any bond from shippers for reimbursement, but its claim department has a general understanding with shippers that if subsequent investigation shows that a claim should not have been paid the shipper will refund the amount. It it said that the company has never lost a dollar through the failure of any shipper to repay the money in such cases. The St. Paul system of handling claims has proved so successful and so popular with shippers that it deserves recognition and publicity. To handle claims promptly it is necessary, first of all, to have competent men. No claim agent in charge of the department can handle claims personally, except unusual or difficult cases, or those involving large amounts. Nine-tenths of the claims presented are for small amounts, and it requires a considerable office force to handle them. One simple feature of the St. Paul system disposes of the great mass of claims. The delivering agent, at every station on the road, must make a full report the day of delivery of any shipment in bad order or anything "short or over." These reports go directly to the claim department. When the shipper presents a claim in proper form, with the expense bill showing the agent's acknowledgement of shortage or damage, the report of the consignee and the invoice, the claim agent can verify it at once by the report from the delivering agent, and the claim can usually be disposed of on the spot. Eighty per cent. of local loss or damage claims are paid within a day after they are received.

Overcharge claims on business from connecting lines are handled just as promptly by the St. Paul people. All that is necessary is to check the rate by the tariffs of the connecting line. If the shipper's claim is correct the overcharge is paid at once, without waiting for the authority or concurrence of the connecting line. This plan ought to be followed by all railroads on overcharges which the delivering agent cannot correct. The road which has collected the overcharge should refund it and settle afterward with its connections.

Loss or damage claims on shipments that have been forwarded to other roads are far more difficult to handle on account of the delay in getting acknowledgement from the foreign road. The St. Paul people have found it necessary to employ expert claim men, who go to the foreign line and camp out in its claim department until all claims due to St. Paul shippers have been settled.

New Rule Adopted by Claim Agents.

A leading claim agent has calculated that it takes an average of 12 days to get replies to inquiries which he sends out. Many roads delay for weeks or months to answer inquiries on interline shipments which they have delivered, and some do not reply at all. Until recently no road would permit its delivering agents to answer inquiries from claim departments of other roads. Progressive claim agents, who want to settle promptly with the shippers on their roads, have found it extremely difficult for this reason to get from the foreign delivering

agent the necessary proof of the loss or damage to justify them in paying out the funds of their corporations.

Last fall the progressive roads finally succeeded in getting the Freight Claim Association to adopt a rule which authorizes direct investigation. The claim agent of one road can now write directly to any local agent in the United States for a report of loss or damage. If a reply is not received in 20 days the inquiry is repeated to the claim department of the road, and after 30 days the inquiring road can charge the claim to the delinquent line. This places a 50-day limit on the time necessary to obtain information from a connecting line, and it has resulted in a great improvement in settling "interline" claims. The fact may be of interest to Eastern shippers that it was the influence of Eastern roads which for five years prevented the adoption of this plan. Even the Southern roads favored it.

When all the facts are considered, it is evident that the "pay on presentation" plan should have the united support of commercial shippers. Important Eastern roads raise the objection that it may be technically illegal, but perhaps their counsel have not considered carefully the legal aspects of the present plan of taking the shipper's money by force, in excess of legal rates, and holding it for months or years. Of course the presentation method cannot be extended to occasional shippers, but where a commercial shipper is doing business every day with the railroad it is amply protected. Very, very few commercial shippers present unjust or excessive claims. They are satisfied to get what is justly due them. On overcharge claims the expense bill alone is sufficient proof. Where a package or piece is short, on an L.C.L. shipment, the railroad is entitled to a reasonable time, not more than a week or two, for efforts to find it. On damage claims the invoice, report of consignee and expense bill, with acknowledgment of damage, should be sufficient when presented by a responsible and reputable shipper.

The Warwick Iron & Steel Company's Report.

The balance sheet of the Warwick Iron & Steel Company, Pottstown, Pa., as of December 31, 1907, is as follows, compared with the same date of 1906:

Assets.

	1907.	1906.
Real estate, plant and equipment	$1,795,806.15	$1,782,862.42
Pig iron, raw material and supplies	605,459.14	562,661.20
Cash in bank	116,476.15	111,091.65
Dry air plant	170,566.33	71,205.12
Employees tenant house account	13,693.83	.....
No. 3 furnace	.....	74,319.37
Bills receivable and accounts receivable	548,956.19	443,396.79
Totals	$3,250,957.79	$3,045,536.55

Liabilities.

Capital stock		$1,486,715.00	$1,486,715.00
Mortgage bonds		225,000,00	240,000.00
Profit and loss account, balance, December 31		462,719.30	332,097.50
Pig iron account:			
Earnings for the year	$457,957.40		$315,390.77
Less interest on bonds and borrowed money	25,428.53		22,147.67
Net earnings		432,528.87	$293,243.10
Amount reserved for relining furnaces		112,174.68	97,552.86
Bills payable and accounts payable		531,819.94	595,928.09
Totals		$3,250,957.79	$3,045,536.55

In connection with the balance sheet the directors have submitted to the stockholders the following report for the year ending December 31, 1907:

The total product of pig iron for 1907 was 256,750 tons. This is in excess of any previous year's production, owing to the operation of No. 3 furnace throughout the entire year, and notwithstanding that No. 1 furnace was blown out November 11, having been in operation only 315 days. No. 2 furnace was blown out December 27, operating 361 days. Both No. 1 and No. 2 furnaces were in need of relining, so that advantage was taken of the reduced demand, which set in the latter part of the year, to put the furnaces out of blast, after piling a tonnage of iron sufficient to protect contracts.

The unfilled contracts constitute valuable assets. While shipments have been postponed in consequence of the enforced idleness and greatly reduced consumption of steel mills and foundries, yet we feel assured that the tonnage represented by our orders will ultimately be taken by the purchasers without the necessity of resorting to extreme measures to enforce the deliveries. No contracts have been canceled, nor will any be canceled, except for insolvency on the part of the buyer or other sufficient cause. The Warwick Company is strong in this position, as it filled many contracts during the early part of 1907 at prices below the cost of production, and now that conditions are reversed a consistent policy will be enforced.

The lease of No. 3 furnace and its operation throughout the year proved profitable. The cost of repairs to this furnace has been charged off to profit and loss account, viz., $62,872.86. Profit and loss account has also been charged with an expenditure of $11,310.32, for the rebuilding of trestles with concrete piers and steel superstructures to replace timber. The increase in weight of cars and locomotives rendered these expenditures necssary. The real estate, plant and equipment account has been increased by $12,943.73, representing additions to equipment. The labor conditions in 1907 and the lack of tenant houses in Pottstown brought about the necessity of supplying houses for a portion of our employees. This represents a net expenditure of $13,693.83. Mortgage bonds to the amount of $15,000 were paid and canceled June 1, 1907, thus reducing the outstanding bond issue to $225,000. Semiannual dividends of 3 per cent. each, amounting to a total of $88,897.20, were paid May 15 and November 15, respectively.

Up to January 1, 1908, the total payments on account of the Gayley dry air plant amount to $170,566.33. It was not until the middle of August that the machinery was sufficiently completed to test. The first two weeks were practically devoted to testing the engines, &c. The air supplied to No. 2 furnace was deprived of a large percentage of its moisture commencing with September. It is due to the assistance obtained from the dry air plant that the management was able to keep No. 2 furnace in operation for a longer period than would have been possible without it. The ability to keep No. 2 furnace running from September to December enabled us not only to prevent the cancellation of basic iron orders, but at the same time to make net gains far in excess of any previous four months in the history of the company. The net earnings for the last four months of 1907 represent a large percentage of the total cost of the dry air plant. Dry air was applied to No. 1 furnace for five weeks with beneficial results.

No. 1 furnace has been relined and is ready to be put into operation on short notice, whenever trade conditions will permit. When No. 2 furnace was blown out the brickwork naturally was found to be in bad condition, owing to its prolonged blast. Repairs cannot be completed before April next. It is believed that the credit to relining account will be ample for repairs to both furnaces.

The Charles G. Smith Company.—Owing to the fact that certain officials of the Charles G. Smith Company, 603-604 Park Building, Pittsburgh, dealer in machine tools, machine shop and emery grinding equipment, are actively connected with the Pittsburgh Emery Wheel Company, the report has become current that it is the intention of the Charles G. Smith Company to discontinue the machine tool business. The company states that this report is utterly untrue, and that, on the contrary, it proposes to continue in the machine tool business actively, as before. Considerable annoyance has been caused by the circulation of the rumor, and the company desires its friends in the trade to know that it has no basis in fact.

The Italian Westinghouse Company (Sociéta Italiana Westinghouse) which started operations last year with a capital of $1,000,000, is completing a plant at Vado, near Savona, for the manufacture of equipment for electric roads.

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Southern Pig Iron in Northern Markets.

A representative of a Southern company producing pig iron for the general market writes us as follows:

We were very much interested in reading the editorial, "Price Questions Go Back to Ore," in *The Iron Age* of January 30. It seems to us that too much prominence is given in this article to the competition of Southern furnaces. The whole production last year of Alabama, Kentucky, Tennessee and Virginia was only about 2,400,000 tons, of which Alabama produced about 1,600,000 tons. This represents practically no increase over the past four years, and we are told that about 60 per cent. of this output is consumed in the South itself. The State of New York produces as much iron as Alabama, and Illinois as much as the entire South. We also note that the foreign field is now open to the South again. Our understanding is that there are very few furnaces in blast in the South at the present time, and we do not know of a single new furnace that is under construction south of Mason and Dixon's Line. You can readily see that we do not believe there will be much Southern pig iron in competition with our Northern producers in their territory.

It has been said for several years that Southern iron is growing to be less of a factor, actually and relatively, in Northern markets. There has been an increasing, though slowly increasing, production of steel in the South, and the output of Southern blast furnaces has practically stood still. Usually only general statements on this subject are made, but the inference they carry is that Northern merchant furnaces are having no serious competition except among themselves. This is the view taken by our correspondent. It is true that the amount of Southern foundry iron sent north of the Ohio and the Potomac rivers was not as great last year as in 1903, the year whose statistics were taken as the basis of the prices made by Lake Superior ore sellers for 1904, as referred to last week. Still, it would seem that the letter quoted from above scarcely takes full account of the competition of Southern iron in Northern districts.

Our correspondent compares the pig iron production of New York State with that of Alabama, and that of Illinois with that of the four Southern States that contain practically all the merchant furnaces in that section. Such a comparison does not signify. Leaving out Southern basic iron, of which the moderate percentage available for the market goes to a limited number of Northern buyers, the really comparable tonnages for the States mentioned are those of foundry and forge iron. The production of these grades in New York last year was about 625,000 tons, and in Illinois about 300,000 tons, as against 2,110,984 tons in the four Southern States our correspondent names.

The production of foundry and forge iron in Alabama, Tennessee, Georgia, Texas, Kentucky and Virginia in 1907 was 2,166,809 tons, while the total production of foundry and forge iron in the country last year, eliminating malleable Bessemer, was about 6,000,000 tons. The South thus contributed something over one-third of the total. No accurate data exist as to the Southern consumption of foundry and forge irons made in the six States named. Allowing for the iron taken by cast iron water pipe works, sanitary pipe foundries and by stove works and machinery foundries in the South, there still remains nearly 25 per cent. of the country's output of foundry and forge irons last year that was shipped from Southern furnaces to consumers in the North. In flush times the competitive phase of this movement is not prominent; quite different is the case in years like 1904 and 1908 and in periods of transition, with moderate activity, as in the first half of 1905.

Passing over our correspondent's reference to the foreign movement of Southern pig iron, which has a past, but neither a present nor a future, a word may be said as to the fact, to which he calls attention, that Southern pig iron production has been stationary in recent years. The figures representing in gross tons the production in 1903 and 1907 of the merchant pig iron States in that section make a striking showing:

	1903.	1907.
Alabama	1,561,398	1,686,674
Tennessee	418,368	393,106
Georgia, Texas, North Carolina	87,255	55,825
Virginia	544,034	478,771
Kentucky	102,441	127,946
Total	2,713,496	2,742,322
United States	18,009,252	25,781,361
Bessemer iron from above seven States	30,830	43,382
Southern Basic	267,999	542,256
Foundry and forge from above seven States	2,414,667	2,156,684
Total foundry and forge, including malleable	5,785,957	6,835,174

We have left West Virginia and Maryland out of the account partly because both are dependent on outside sources for ore—so that in that sense their iron industries are not Southern—but more because they are not producers of foundry and forge iron. The significant exhibit of the table is that the Southern States produced less foundry and forge iron in 1907 than in 1903, though the country produced 43 per cent. more of all kinds of pig iron in the former year than in the latter, and 18 per cent. more of pig iron for iron foundries and iron rolling mills. The dwindling of Southern merchant iron as a factor in the Northern trade is emphasized by the table, but as has been shown it is by no means a negligible factor. It must be taken fully into account in any consideration of the price Northern producers of foundry and mill irons are asked to pay for Lake Superior ores.

Alien Workmen and Accident Liability.

The employment of great numbers of immigrants has raised the new and important question under the employers' liability acts of several States as to whether ignorance of the English tongue is a sufficient reason in the eyes of the law to relieve an injured employee of the burden of his own negligence or that of a fellow workman. The question is yet to be decided to the point of established practice; in the several cases so far reported the courts have been inclined to avoid this aspect of plaintiffs' contentions. Sufficient progress has been made, however, to indicate that under certain circumstances the plea of ignorance of English may be sustained. In a New York case the court held that failure to understand English is not the negligence of the master where the work is simple. An Illinois court has decided that the master is not obliged to give warning to a servant in his language unless he knows that the servant does not understand English. The railroad laws of Ohio recognize the existence of this imperfectly qualified element among

workmen by forbidding the employment of certain servants who cannot read, write or speak English. But the question in a large sense has yet to be fought out in its constantly varying aspects until substantial precedent has been established to govern the future conduct of cases in which this element of ignorance is present.

The laws regulating liability for accident to a workman generally agree that when the man is injured through his own negligence his employer is not responsible for damages; and that where an accident results from the negligence of a fellow servant the burden rests upon the fellow servant and not upon the employer. The injured man may recover from his fellow servant, but not from their employer, excepting when the fellow servant is vested with authority, as in the case of a superintendent or foreman. If a foreman should put a man to work on a machine, pointing out its dangers, and the man should be hurt because he did not heed the warning, there would be no liability. In the eyes of the law he had assumed the risk and the fault was his own. These are general principles of law, simply stated, but the new contention of ignorance of English introduces an element of doubt as to whether the workman can be considered to have assumed a risk he did not understand because he had not comprehended the warning; and whether another workman injured through this absence of understanding can be deprived of the right to recover from the employer on the ground of negligence of a fellow servant.

We will presume that a superintendent puts a new man, whom he sees is a foreigner, to work on a press, instructing him in English as to the dangers of the machine and the manner of operating it. The man may seem to understand what he is told; it would be only natural that the newly arrived foreigner should be eager to begin his new work. Yet he may imperfectly understand English. He is injured and the plea is made in his behalf that he cannot be held to have been negligent, because he had no knowledge of his dangers. Likewise, to illustrate the case of the fellow servant, the foreigner may be set to work with others and because of his ignorance cause an accident to another workman. In a case now pending in Massachusetts a certain machine required the services of two men, an operator and an assistant. The latter was absent from the factory and the superintendent put a new man in his place. The operator got his hand caught in a press mechanism, and, realizing his danger, called to his new assistant to throw off the power. The man obeyed intelligently enough. The power was off, but the hand, though uninjured, could not be withdrawn until the die was raised. He called to the assistant, "reverse it," but the man failed to understand his meaning and threw on the power. The hand was crushed beyond all further usefulness. The new man did not understand English. The accident occurred before he had been at work 5 min., and the operator asserted he did not realize that his assistant could not understand his directions. The claim of the plaintiff in an action brought against the employer to recover damages for this accident is that the plea of negligence of a fellow servant could not be maintained because the ignorance of English made it impossible for him to understand directions as to operating the machine, and that consequently negligence rested with the superintendent, who put him to work.

A thorough discussion of the questions involved develops apparently limitless intricacies of law. The general contention, however, is a warning to employers of alien workmen, that they may safeguard their interests by strict precaution against possibilities of similar happenings in their works. The courts may eventually decide that as a principle of law ignorance of English is the misfortune of the workman, and not a reason for negligence on the part of the employer or his agents. In the meantime, however, it would be well to consider the matter as one of grave doubt, and act accordingly. Where a polyglot population constitutes the source of labor supply interpreters should be developed, preferably among the workmen themselves, a course followed in many industrial establishments, not only because of the danger of accidents through failure of understanding, but because a workman must be intelligently instructed in order to do his work well and quickly. Superintendents and foremen should be held strictly to account for this important part of their duties.

Iron Castings and Rolled Steel in 1907.

A contrast between the pig iron statistics for 1907 and those for 1906 is worthy of mention. Whereas the increase in production in 1906 over 1905 was all in steel making pig iron, other irons, indeed, falling somewhat behind, the increase in 1907 over 1906 went to foundry and mill irons, while iron for steel works declined. The significance of the statistics will appear by setting them down in the two classes named. Thus:

	Gross tons.
Net increase in 1906 over 1905	2,314,811
Increase steel making pig iron in 1906 over 1905	2,358,563
Net increase in 1907 over 1906	474,170
Increase foundry and mill pig iron 1907 over 1906	692,817

The inference from the figures is that steel products made a great gain in 1906 over 1905, as official statistics showed to be the case, while the output of iron foundries was substantially the same in the two years. The conclusion derivable in a similar way from the pig iron figures for 1906 and 1907 is that last year the production of steel in the United States fell somewhat below the total of 23,398,136 tons of ingots and castings in 1906 and that iron foundries, including those making malleable castings, made a gain over their outputs for 1906. The American Iron and Steel Association has not yet published its detailed figures classifying the pig iron product of last year, but from the statistics as given out we may make the distinction between steel making irons and those going to the foundry cupola or puddling furnace. A comparison with 1905 and 1906 follows:

	1905.	1906.	1907.
Bessemer and low phosphorus.	12,407,116	13,840,518	13,231,620
Basic	4,105,179	5,018,674	5,375,219
Ferro and spiegel	293,976	305,642	339,348
Foundry and high silicon	4,755,288	4,768,011	6,835,174
Malleable Bessemer	635,236	699,701	
Forge, mottled, &c	795,585	674,645	
	(6,186,109)	(6,142,357)	
Total pig iron	22,992,380	25,307,191	25,781,361

In advance of the compilation of the statistics of steel production for 1907 it may be said, on the basis of the above pig iron comparison, that the Bessemer steel output last year fell off more than the total steel output, while basic pig iron, as it has done every year since the statistics of its production were first separately compiled, in 1897, showed an increase over the preceding year, indicating that basic steel also increased. The Bessemer rail, wrought pipe and sheet and tin plate trades fell off notably in the slump of last November.

The above table well tallies with what is known as to the sudden pinching off of the business of the steel mills in November, and emphasizes the ability of the steel companies to adjust their production quickly to the needs of the market. On the other hand, the business of foundries involves many steps between the placing of contracts for castings and the delivery of the finished product. This accounts in part for the lagging of merchant blast furnaces some weeks behind the steel works

furnaces in the movement of curtailment. In January merchant furnaces were still going out when some of the steel works furnaces that went out in November and December were starting up again.

One factor in the increase in foundry iron production last year, accompanying a decrease in steel making iron, should be mentioned. That is the increase in stocks of pig iron at merchant furnaces. While foundry iron production may be estimated at 450,000 to 500,000 tons more in 1907 than in 1906, the increase in consumption was less. Southern merchant furnaces had stocks at the end of the year which probably exceeded 200,000 tons, and the stocks at Northern merchant furnaces on December 31 were doubtless more than that, the total representing a substantial increase over stocks on hand at the close of 1906.

CORRESPONDENCE.

Excessive Machinery Driving.

To the Editor: The editorial in your issue of January 16, eititled "A Fallacy of Machinery Driving," appeals strongly to me in view of a recent experience I have had, and which I believe has been the experience of others in our line.

I was some time ago requested to call at a customer's factory and examine a machine which was giving trouble. I did so, and while there my attention was called by the treasurer of the company, who is recognized as a successful financial manager, to two or three other machines of heavier type which we had sold them. He commented with great pride on the rapidity at which they were being run, and stated that this was accomplished only after he had been obliged to call the superintendent to account several times. In view of my errand to the factory, it was quite natural for me to inquire further into the matter, and in looking it up I found that, while it was true they were running at from two to three times the speed formerly attained on these machines, the feeds were reduced in the same ratio, resulting in a reduced production, as compared with what would have been accomplished had the correct ratio of speed and feed been maintained, and in addition there was the unnecessary wear to the running parts of the machines, owing to the excessive speed at which the machines were being operated. However, the speed was what the treasurer wanted and the superintendent gave it to him, remarking to the writer at the time that we would have some more "kicks" to look after in the near future.

Upon investigating the complaint that I had been called to the factory for, I found that this tool had also been run away beyond its capacity as to speed, resulting in the heating of some bearings. After a "heart to heart" talk with the treasurer, he was inclined to feel that perhaps after all the superintendent did know something about the speeds that the tools should be operated at. I advised him that if in the future he questioned his superintendent's judgment to take it up with the manufacturers of the particular tool that he wished to know about, before "jacking" speeds up, and I felt quite sure they would be pleased to give him the necessary information, and in the particular case at hand it would only be fair for his company to pay for the parts necessary to put the machine in order.

If the manufacturers were building tools only for high speeds (cutting air) they would have designed them on altogether different principles. When a machine is sold to do a certain class of work the literature describing the machine usually gives the proper speeds at which it should be operated, and it seems that the advice of the manufacturer ought to govern the use of the machine, rather than the man who has had no experience whatever with machinery, or the production department, sometimes called the "speed boss," who in many cases has never had any practical experience in the construction of machine tools, and whose only object it appears is to see the chips fly regardless of how long the machine can continue in operation.

I would be glad to see you continue this work of education further in *The Iron Age*, as it would be of immense service, not only to the manufacturer, but to the poor salesman who is usually the "buffer" in matters of this kind. A MACHINE TOOL DEALER.

Labor Unions Liable for Boycott Damages.

Another heavy blow was dealt the objectionable practices of labor unions by a decision of the Supreme Court of the United States on Monday, February 3, that a boycott which is of such character as to restrain trade is actionable under section 7 of the Sherman antitrust law, which provides for the recovery of threefold damages. The opinion given was a unanimous one and its outcome is likely to be the most serious damage the trade unions have sustained in years, for in its full import it means a union which undertakes a boycott renders every one of its members personally liable for threefold damages to the firm or individual boycotted. Recent weeks have been especially disastrous to labor unions in the overthrow of their court contentions.

The case decided at Washington on Monday was that of Dietrich Loewe & Co., hat manufacturers of Danbury, Conn., against Martin Lawlor and 200 other members of the United Hatters of America.

The United Hatters, with the assistance of the American Federation of Labor, were undertaking to unionize all the hat factories in the country. In 70 of the 82 shops they succeeded. Loewe & Co. were one of the 12 concerns that held out. Thereupon the boycott was declared. The Federation took up the fight and printed the name of the Loewe concern in the "We don't patronize" list in the *Federationist*, the official organ of the Federation. Loewe alleged that he had sustained actual damages to the amount of $80,000, and sued Lawlor and 200 other members for $280,000, under section 7 of the Sherman act, which says:

> Any person who shall be injured in his business or property by any other person or corporation by reason of anything forbidden or declared to be unlawful by this act, may sue therefor in any Circuit Court of the United States in the district in which the defendant resides or is found, without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the costs of suit with a reasonable attorney's fee.

In making the decision of Monday the Supreme Court remanded the case to the Circuit Court for trial of the action for threefold damages.

The Hamilton Steel & Iron Company, Ltd.

The Hamilton Steel & Iron Company, Ltd., Hamilton, Canada, has issued a circular stating that the directors have incorporated a new company, identically named, with authorized capitalization of $5,000,000, and an agreement has since been entered into with the new company by the directors, which agreement is to be completed by April 30 next, the date of the expiration of the current financial year of the company. The circular states that trustees are to be appointed to receive certificates of shares from the shareholders, and the trustees will issue receipts entitling the holder to "receive a certificate of the new company for the increased number of shares to which he will become entitled." Any dividend that may be declared for the quarter ending April 30 will apply only on the shares of the present company, and will be paid to shareholders as of record at the close of business April 30. We are advised that the matter of stock issue has not yet been decided by the board, but that in any case, if business were of the best, the amount that would be distributed to present shareholders would not exceed two shares for one of the present company. It will be observed that the arrangements thus set forth are somewhat different from the statements made in *The Iron Age* of January 23, which were based on incorrect information.

Second Conference of Iron and Steel Manufacturers.

The second general conference of the leading American iron and steel manufacturers was held in this city on Thursday last. The following statement regarding the meeting has been made by Judge E. H. Gary, chairman of the United States Steel Corporation:

A conference of representative pig iron and iron and steel manufacturers was held on Thursday for the purpose of carefully considering the general condition of the trade and for exchange of views as to the future. Much information was received, and many questions relating to local conditions and particular commodities were discussed. At the close of the deliberations, which occupied the greater part of the day, every manufacturer present gave the opinion that no necessity or reason exists for the reduction of prices at the present time, and that this view should be stated at the large gathering which was expected for the evening. Upon the invitation of the General Advisory Committee heretofore appointed, there were present at the dinner served at the Waldorf-Astoria about 75 gentlemen, as follows, representing the principal manufacturers of iron and steel in this country and including several leading purchasers of these commodities:

MORRIS BACHMAN, president Sharon Steel Hoop Company, Sharon, Pa.
EDWARD BAILEY, president Central Iron & Steel Company, Harrisburg, Pa.
GEORGE BARTOL, manager Otis Steel Company, Ltd., Cleveland, Ohio.
C. W. BRAY, president American Sheet & Tin Plate Company, Pittsburgh, Pa.
E. J. BUFFINGTON, president Illinois Steel Company, Chicago.
J. G. BUTLER, JR., president Bessemer Ore Association, Youngstown, Ohio.
J. A. CAMPBELL, president Youngstown Sheet & Tube Company, Youngstown, Ohio.
E. A. S. CLARKE, president Lackawanna Steel Company, New York.
E. S. COOK, president Warwick Iron & Steel Company, Pottstown, Pa.
DANIEL COOLIDGE, president Lorain Steel Company, Philadelphia.
W. E. COREY, president United States Steel Corporation, New York.
GEORGE G. CRAWFORD, president Tennessee Coal, Iron & Railroad Company, Birmingham, Ala.
H. C. DALTON of Pickands, Mather & Co., Cleveland, Ohio.
CHARLES DEERING, chairman International Harvester Company, Chicago.
W. B. DICKSON, vice-president U. S. Steel Corporation, New York.
A. C. DINKEY, president Carnegie Steel Company, Pittsburgh, Pa.
R. H. EDMONDS, editor *Manufacturers' Record*, Baltimore, Md.
B. F. FACKENTHAL, JR., president Thomas Iron Company, Easton, Pa.
J. A. FARRELL, president United States Steel Products Export Company, New York.
C. C. FELTON, president Penn Steel Company, Philadelphia.
E. H. GARY, chairman United States Steel Corporation, New York.
JAMES GAYLEY, first vice-president United States Steel Corporation, New York.
E. M. HAGAR, president Universal Portland Cement Company, Chicago.
CHARLES HART, president Inland Steel Company, Chicago.
J. A. HATFIELD, president American Bridge Company of New York, New York.
J. H. HOYT, Cleveland, Ohio.
C. R. HUBBARD, president Wheeling Iron & Steel Company, Wheeling, W. Va.
A. F. HUSTON, president Lukens Iron & Steel Company, Coatesville, Pa.
C. N. HUTCHINSON, president Grand Crossing Tack Company, Grand Crossing, Chicago, Ill.
ARCHIBALD JOHNSTON, president Bethlehem Steel Company, South Bethlehem, Pa.
JONATHAN R. JONES, secretary Alan Wood Iron & Steel Company, Conshohocken, Pa.
I. A. KELLEY, president Ashland Steel Company, Ashland, Ky.
WILLIS L. KING, vice-president Jones & Laughlin Steel Company, Pittsburgh, Pa.
CHARLES KIRCHHOFF, editor *The Iron Age*, New York.
G. P. LETCHWORTH, president Pratt & Letchworth Company, Buffalo, N. Y.
HON. FRANKLIN D. LOCKE, Buffalo, N. Y.
JAMES LORD, president American Iron & Steel Mfg. Company, Lebanon, Pa.
THOMAS LYNCH, president H. C. Frick Coke Company, Pittsburgh, Pa.
CYRUS H. MCCORMICK, president International Harvester Company, Chicago.
C. H. MCCULLOUGH, vice-president Lackawanna Steel Company, Buffalo, N. Y.
G. G. MCMURTRY, chairman American Sheet & Tin Plate Company, New York.
SAMUEL MATHER, Cleveland, Ohio.
BENJAMIN NICOLL, 59 Wall street, New York.
W. P. PALMER, president American Steel & Wire Company, Cleveland, Ohio.
LEONARD PECKITT, president Empire Steel & Iron Company Catasauqua, Pa.
JOHN A. PENTON, editor *Iron Trade Review*, Cleveland, Ohio.
GEORGE W. PERKINS, 23 Wall street, New York.
VERYL PRESTON, Eastern Steel Company, New York.
CHARLES A. RATHBONE, Buhl Malleable Company, Detroit, Mich.
J. H. REED, Pittsburgh, Pa.
DAVID REEVES, president Phœnix Iron Company, Philadelphia.
JOHN REIS, assistant president United States Steel Corporation, New York.
FRED. ROEBLING, John A. Roebling's Sons Company, Trenton, N. J.
W. A. ROGERS, Rogers, Brown & Co., Buffalo, N. Y.
WALLACE H. ROWE, president Pittsburgh Steel Company, Pittsburgh, Pa.
W. B. SCHILLER, president National Tube Company, Pittsburgh, Pa.
CHARLES M. SCHWAB, chairman Bethlehem Steel Company, New York.
I. M. SCOTT, president La Belle Iron Works, Steubenville, Ohio.
F. C. SMINK, president Reading Iron Company, Reading, Pa.
POWELL STACKHOUSE, president Cambria Steel Company, Philadelphia.
ALEX. THOMPSON, Inland Steel Company, Chicago.
JOHN A. TOPPING, president Republic Iron & Steel Company, New York.
W. R. WALKER, assistant president United States Steel Corporation, New York.
W. L. WARD, Russell, Birdsall & Ward Bolt & Nut Company, Portchester, N. Y.
GEORGE W. WICKERSHAM, 40 Wall street, New York.
FRANK S. WITHERBEE, Witherbee, Sherman & Co., New York.
F. W. WOOD, president Maryland Steel Company, Sparrows Point, Md.
W. P. WORTH, Worth Brothers Company, Coatesville, Pa.
CHARLES H. ZEHNDER, president Allegheny Ore & Iron Company, New York.
AUGUST ZIESING, president American Bridge Company, Pittsburgh, Pa.

Brief addresses were made by practically every one present, and without exception the opinion was voiced that prevailing prices are fully justified and should not be changed. J. Pierpont Morgan was also present, and made a brief address. While no agreements for the maintenance of prices were made or suggested, it was the expressed belief of all that such maintenance would result in benefit to the manufacturers, to their customers, to the employees and to business interests generally; that stability of prices, if and when reasonable, is desirable; that violent fluctuations, resulting in abnormally high prices when the demand exceeds the supply, and unreasonably low prices when the reverse is true, are to be deplored. It was also remarked that the present disposition to assist one another by the friendly interchange of views rather than a resort to unreasonable and destructive competition, which would ultimately result in the application of the law of the survival of the fittest, is in accordance with the present state of public sentiment.

The meeting afforded a striking illustration of the fact that there can be active, sharp competition in business without necessitating an unfriendly and bitter warfare that in the end must be most injurious to the manufacturers, the purchasing public and to the hundreds of thousands of employees who are dependent upon the success of their employers for work at fair wages.

As to the future, opinions were, without exception, conservatively optimistic. Already there is a marked, though slight, improvement. It is not expected the volume of business will be large in the immediate future, and manufacturers are prepared to meet the circumstances. That the wealth and wonderful resources and recuperative powers of the country will before long bring a restoration of business that will employ all the furnaces and mills to their full capacity is the expectation of the leaders in iron and steel industry.

A feature of importance considered at the meeting of Thursday was the reference to a resolution received from a joint meeting of the Steel Founders' Society and the American Malleable Castings Association, held January 17. Members of these associations are large purchasers of the commodities manufactured and sold by those who

were at the banquet on Thursday evening. The resolution is as follows:

Whereas, The iron and steel industry of this country is an important factor in establishing our business conditions, and the unsettled price of raw materials is a disturbing element, preventing the return of confidence and the employment of hundreds of thousands of operators; be it

Resolved, That we deem it as being for the greatest good of all our industries using pig iron as a basic material that as soon as possible a reasonable minimum price be established and maintained, in order that the product of our many establishments may also reach a fair minimum price.

Similar expressions have been received by many other prominent purchasers of iron and steel.

The New Trade Agreement with France.

Its Significance Not Correctly Reported.

WASHINGTON, D. C., February 4, 1908.—The character and scope of the recently concluded commercial agreement with France apparently are generally misunderstood, judging by the statements regarding it that have appeared in the daily press. It is really favorable to the United States, and our manufacturers and exporters should not miss the opportunity now presented to seek better terms for the admission of their products into France and Algeria and ultimately into other countries. Though referred to in the press as a reciprocity treaty, the new agreement is, in fact, a *modus vivendi*, intended merely as a temporary convention for the maintenance of the status quo pending the negotiation of a more comprehensive agreement to be based on the conclusions of a joint commission, which is specifically provided for. Notwithstanding its limited scope, however, the *modus* provides for the protection of American trade against discrimnatory French legislation and secures to certain American products the most favored nation treatment.

Important Features of the Agreement.

The most important features of the new agreement are, first, the conditional clause of Article II, inserted for the protection of American trade with France; and second, the provision of Article III, for the creation of a joint commission to consider the tariff relations of the two countries, with a view to the drafting of a new reciprocity treaty of broad scope. The conditional clause of Article II, which follows the concession of a reduction of 20 per cent. in the duties on French champagnes, as imposed by the Dingley act, is as follows:

But it is expressly understood that this concession may be withdrawn in the discretion of the President of the United States whenever additional duties beyond those now existing and which may be deemed by him unjust to the commerce of the United States shall be imposed by France on products of the United States.

This feature of the agreement is of far reaching consequence, and is based upon a principle heretofore but rarely recognized in international trade conventions. The reservation of the right of the President of the United States to withdraw the concession on French champagnes whenever France adopts new rates of duty that may appear to the President to be unjust to American commerce, operates to protect absolutely the trade of the United States against any such hostile legislation as has long been pending in the French Parliament. For several years measures have been urged in the Chamber of Deputies proposing to increase the existing rates of the French tariff on many products which are chiefly imported from the United States, and the State Department has not seen its way clear to meet these attacks, for it is generally conceded as a principle of international comity that the tariff rates of a country are matters of domestic concern only, provided such rates are impartially levied upon the products of all countries.

Of course, the fact that the United States supplies the greater part of any given commodity imported into France would render American exporters the victims of any material increase in duty. Secretary Root, keenly alive to this feature of the situation, has very shrewdly guarded against such indirectly discriminating legislation by providing that the reduction in the duty on French champagne, which has long been desired by the producers of that article, may be withdrawn "whenever additional duties beyond those now existing," and which may be regarded by the President as unjust to the commerce of the United States, shall be imposed by France on any product of the United States. This feature of the agreement is counted upon to put an end to the agitation in the French Parliament of legislation hostile to American manufactures, for it is now practicable for the President promptly to retaliate in a most effective manner.

The New French Tariff.

The French Government has in course of preparation a project for a new tariff on a basis said to be materially higher than that now in force and having a differential in some cases exceeding 50 per cent. between maximum and minimum rates. Should this new tariff take effect before any further reciprocal trade arrangement is made between France and the United States, it would be entirely competent for the President, in the event that the new schedules imposed burdensome rates on any important American product, to withdraw the 20 per cent. concession on French champagne, a fact that may be counted upon to have a very salutary influence upon the framers of the new tariff.

Perhaps the most important feature of the convention is the provision made therein of the appointment of a joint commission to consider the tariff relations of the two countries. This commission will have unlimited scope in the investigation of existing conditions, not only with respect to customs administrative practice, but also concerning the practicability of reciprocal tariff concessions, and it is among the possibilities that a basis may be reached for the conclusion of a very comprehensive treaty that will accord to nearly all American products the minimum rates of the existing and future French tariff schedules. Although no official announcement has yet been made, it is the best opinion here that in place of appointing a new commission on behalf of the United States the President will revive the so-called North Commission, which recently negotiated a reciprocity agreement with Germany. This commission consisted of S. N. D. North, Director of the Census, chairman; James L. Gerry, chief of the Customs Division of the Treasury Department, and N. I. Stone, tariff expert of the Department of Commerce and Labor. It is understood here that the new commission will sail for France at an early date.

American manufacturers and exporters desiring to make representations to the commission regarding their trade with France should at once prepare memoranda to be forwarded to the chairman of the American commission as soon as the official announcement of its appointment is made. The commissioners will welcome any data concerning American export trade that may be supplied, and obviously it will be of advantage to producers in the United States to afford the commissioners the fullest possible information concerning matters which may come before them in the negotiations now in prospect.

W. L. C.

The Cast Iron Pipe Rebate Case.—In setting aside the conviction of the Camden Iron Works for accepting rebates on shipments of cast iron pipe, the United States Court of Appeals has given a decision that is regarded as having the most important bearing upon the application of the Interstate Commerce law that has been rendered since it was first enacted. The point considered thus settled is that when a shipper makes a contract with a foreign carrier for continuous transportation over lines, either on water or land, both within and without the United States, he can with impunity accept a refund from that carrier upon the total amount of the freight charges paid. The court announces the conclusion that there was no evidence to sustain the conviction of the defendant, and therefore the request for a direction to the jury to render a verdict of not guilty should have been granted.

The Northern Electrical Mfg. Company, Madison, Wis., announces the removal of its St. Paul office from 21 East Fifth street to 516 Endicott Building, St. Paul. T. E. Drohan, former superintendent of the company's shops at Madison, is in charge of the new office.

Canada's Shipbuilding Industry.

TORONTO, February 1, 1908.—Inactivity has for some time been the rule at Ontario shipyards. At the beginning of the year the Collingwood Shipbuilding Company closed down because of a strike following a notice to the men that their wages would be reduced 15 per cent. At a meeting of the directors on January 22 it was decided to reopen the works this week if the necessary labor could be obtained. It is thought that the men will be ready to start on the company's proffered terms. It is said that work is not lacking, as the company has many vessels to repair before the season of navigation begins, a number of scows to build, and the practical certainty of an order to construct a passenger steamer for the Northern Navigation Company. The company employs 450 men, and the cut in wages was decided upon because it appeared hopeless to tender for the building of a large vessel that is to be added to one of the lake fleets if wages cost were kept at its former level. Speaking of the situation, B. M. Smith, the company's manager, had this to say:

We have never made a dollar, nor has any other company in Canada made money out of shipbuilding. We have had to contend with the free importation of British-built vessels, and with the United States scale of wages. We spent $50,000 in bringing in Scotch and United States shipbuilders and in perfecting our organization, and it is with great reluctance that the decision to close down was reached. We offered to build two steamers for the C. P. R. at cost, plus 5 per cent., in order to retain our organization intact, but they decided they could do better in the old country and bought there.

The Canadian Shipbuilding Company.

It was stated some weeks ago in these columns that the Toronto works of the Canadian Shipbuilding Company had closed down on account of a strike of its machinists, who wanted a 9-hr. day. A fortnight ago there was a meeting of the bondholders and other creditors of the company, and an arrangement was made for the sale of the Toronto works and for the continuing of operations by the company at its Bridgeburg plant on the Niagara River. The money realized from the sale of the Toronto plant—about $175,000—will not suffice for the paying off of the company's indebtedness, but it is understood that the creditors are willing to await the results of the concentration of the manufacturing outfit at Bridgeburg. The Toronto plant had fallen behind the needs of the time. Larger engines are now required than those installed years ago in these works. The company has been finding it necessary to purchase parts of ship machinery, owing to the inability of its Toronto works to turn out those parts. For the making of engines for steamers of 10,000 tons the Toronto plant was entirely inadequate. The company will continue to buy engines and other machinery until a plant on the necessary scale for producing equipment is added to the Bridgeburg works. The Bridgeburg plant is at work, and there appears to be enough to keep it going in the immediate future. A. Berg & Sons, manufacturers of brick machinery, have bought the Toronto site and buildings. The property was originally the Doty Engine Works. About 15 years ago it was purchased by the Bertrams, and the business was afterwards carried on by the Bertram Engine Company. In the middle of 1905 it was bought by the Canadian Shipbuilding Company. The latter company's capital is $1,000,000 and its directors are all prominent capitalists of Toronto. Some very fine passenger steamers have been built there for the Niagara steamship lines and the Ontario & Richelieu Navigation Company. There were rumors of an amalgamation of the Canadian Shipbuilding Company, the Polson Iron Works Company, the Collingwood Shipbuilding Company and the company that proposes to establish a big plant at Fort William, but these have been denied.

Competition in the Coasting Trade.

Canadian shipbuilding interests have agitated for years to obtain from the Dominion Government special consideration for their industry. They asked that all vessels of foreign register be excluded from Canada's coating trade; that a tonnage bounty be paid on the output of Canadian yards, and that the materials of their construction be admitted free of duty. So far the latter two petitions have been denied, but the first has now been granted. By an order in council the Dominion Government last week canceled the privilege of carrying between Canadian ports by vessels of Italy, Germany, the Netherlands, Sweden, Norway, Austria-Hungary, Denmark, Belgium and the Argentine Republic. The order takes effect January 1 next. It puts an end to a privilege enjoyed by Italy since 1873, Germany since 1874, Austria-Hungary since 1876, Denmark since 1877, Belgium since 1879 and the Argentine Republic since 1881. It was by successive orders in council the right of taking part in Canada's domestic traffic was conferred on vessels flying the flags of these several countries. The decline in Canadian shipbuilding, which followed the substitution of steel for timber as the material for frames, rendered it necessary to admit foreign vessels. Norwegian and Swedish vessels had become the most aggressive competitors in the Canadian coast trade. The wages paid to crews on these vessels are very low; the vessels are all vitualed at home for the voyage both ways; they are of a poor class; they are not bound by the same exacting load line laws as Canadian vessels; hence they can carry more cheaply than can Canadian vessels. If a Norwegian vessel engaged in the Canadian coast trade is damaged she can go to a United States yard for repairs and return to the Canadian carrying trade without check. If a Canadian vessel were to go to an American shipyard for repairs she could not return to the Canadian trade without the payment of the duty on the cost of the repairs. Norwegian vessels did a large business in the carrying of coal to Montreal from the Sidney docks of the Dominion Coal Company.

A Bounty.

There is still an expectation that the Dominion Government will grant a bounty on ships built in Canadian yards. Representations in favor of that policy continue to be pressed. Especially insistent is the demand from Nova Scotia. In the last session the Legislature of that province passed a resolution declaring in favor of the Dominion assisting the shipbuilding industry by a substantial tonnage bounty. The province offers aid, and there are standing offers of subsidies from Dartmouth and Sydney for the establishment of shipyards within the bounds of these municipalities. C. A. C. J.

The Strong Steel Foundry Company.

Papers were filed February 1 at Albany, N. Y., for the formation of a new company at Buffalo, N. Y., to manufacture steel castings under the name of Strong Steel Foundry Company. The officers have secured the buildings formerly occupied by the Buffalo Cement Company, at Main and Amherst streets in that city, with railroad switches. Together with the usual line of standard open hearth steel castings, the plant will be equipped for the manufacture of special steels, such as manganese, vanadium, chrome and other grades, to meet the technical requirements of customers. It will have a capacity of 400 tons per month.

The capital stock of the company is $50,000. The officers and directors of the company for the first year are as follows: E. M. Hager, president; Alfred A. Berrick, vice-president; O. H. P. Champlin, secretary and treasurer; E. C. Strong, general manager, and Alvin W. Day. Mr. Strong has been in the steel business for the past 18 years and has been responsible for every pound of steel produced by one of the largest and most successful steel casting plants in the country.

The first five years of operation of the profit sharing plan of the United States Steel Corporation ended with January, and those of its employees who have continuously held the preferred stock purchased when the plan was first announced in 1903 received an extra dividend of 65.4 per cent. from the fund accumulated from the forfeiture of the bonus of $5 per share per annum by those who sold their stock or discontinued payments on it. Including the 7 per cent. dividends received for five years, the stock has returned a total of $125.40 per share, or $42.90 above $82.50, its cost price to the employees.

PERSONAL.

Arthur Reiche of the Arthur Koppel Company, Machesney Building, Pittsburgh, Pa., sails for Europe this week on a combined business and pleasure trip, to be absent about two months.

The Youngstown Car Mfg. Company, Youngstown, Ohio, has added to its sales force Parker Dodge, graduate of the Massachusetts Institute of Technology, who will be located in the Pittsburgh District, with temporary offices at 220 Lewis Building, Pittsburgh, Pa.

Thomas K. Glenn, former vice-president and manager of the Georgia Railway & Electric Company, has accepted the presidency of the Atlanta Steel Company, Atlanta, Ga. The latter company has secured as superintendent Thomas M. Girdler, formerly connected with the Colorado Fuel & Iron Company, before that with the Oliver Iron & Steel Company, and several years ago the London representative of the Buffalo Forge Company.

H. W. Nutt, who for the past year has represented Buell & Mitchell, New York, in Boston, has been appointed district manager for the New England States by the General Fireproofing Company, and will have headquarters at 161 Devonshire street, Boston. He has been assistant general sales agent for the American Steel Hoop Company, secretary of the American Tube & Stamping Company, Bridgeport, Conn., and vice-president of the Superior Steel Company, Pittsburgh.

L. P. Ross has resigned as manager of the Cranberry Furnace Company, Johnson City, Tenn., and gone to Standish, N. Y., where he becomes general manager of the Northern Iron Company. E. P. Ross, who has lately been manager of the Rockhill Furnaces in Pennsylvania, succeeds his brother as manager of the Cranberry Furnace.

At the recent annual meeting of the Buckeye Steel Castings Company, Columbus, Ohio, Frank Rockefeller of Cleveland retired from the presidency, and was succeeded by S. P. Bush, who has been second vice-president and general manager. Mr. Rockefeller was elected second vice-president. Mr. Bush retains the position of general manager.

Owing to his large outside interests, John E. Carnahan has retired from the presidency of the Carnahan Stamping & Enameling Company, Canton, Ohio. Officers elected for the ensuing year at the recent annual meeting are as follows: President, Ed Langenbach; first vice-president; Fred H. Snyder; second vice-president, A. G. Ryley; secretary-treasurer and general manager, R. E. Bebb.

J. W. Duntley, president of the Chicago Pneumatic Tool Company, sailed for Europe on Tuesday, expecting to be back to attend the annual meeting of the company which will occur the last of the month.

James F. Donahue, for some years manager of sales of the New Castle Forge & Bolt Company, New Castle, Pa., has resigned to become Western sales agent for the Russell, Burdsall & Ward Bolt & Nut Company, Port Chester, N. Y., and will have his headquarters in Chicago. Paul McBride, formerly connected with the Pennsylvania Engineering Works at New Castle, succeeds Mr. Donahue as manager of sales of the Forge & Bolt Company.

Homer D. Williams, general superintendent of the Duquesne steel works and blast furnaces of the Carnegie Steel Company at Duquesne, Pa., has been elected president of the Duquesne Trust Company at Duquesne.

Lindon W. Bates has resigned as president and director of the Empire Engineering Corporation, 71 Broadway, New York, and Wm. Barclay Parsons, who has always been one of the directors, has been elected president in his stead.

At the meeting of the Engineers' Committee of the New York Central Railroad Lines, in Buffalo, N. Y., last week, at which the main object of discussion was the section of rail to be ordered this year, the recommendation was made that those lines should make no change in standards of rail sections for 1908. This will enable the lines to place their orders on present standards for this year.

OBITUARY.

SEBASTIAN BRAND, founder and president of the Brand Stove Company, Milwaukee, Wis., died February 1, aged 77 years. He was born in Germany, and came to this country in 1854, locating in Milwaukee. In 1870 he became sole owner of a foundry business, in which he became interested in 1868, and the Brand Stove Company was the outcome. He leaves a daughter, who is the wife of William F. Hyde, present secretary and treasurer of the company.

The iron trade of the entire world will regret to learn of the death of Mrs. ELLEN W. FRITZ, wife of the venerable John Fritz, which occurred at Bethlehem, Pa., January 29. Mr. Fritz is regarded with such affection that his bereavement will evoke a universal expression of profound sympathy.

O. F. NICHOLS, chief engineer of the Department of Bridges, New York City, died February 4, aged 63 years. He was born in Newport, R. I., and was graduated from the Rensselaer Polytechnic Institute in 1868. He was a member of a number of scientific and technical societies and the Engineers' Club. He leaves a widow and two daughters.

THOMAS MELLON, the eminent financier, died at Pittsburgh, February 4, aged 95 years. He was interested in important business interests aside from banking, having been one of the leading men in founding the Aluminum Company of America, the Carborundum Company, the Georgia Bauxite & Mining Company, the J. M. Guffey Petroleum Company, the Gulf Refining Company and the Union Steel Company. The last named is now owned by the United States Steel Corporation.

New Blast Furnace Construction.—The American Iron and Steel Association statistics show that on December 31, 1907, 30 blast furnaces in the United States were in course of erection, 4 furnaces were being rebuilt and 1 furnace was to be revived. Of the building furnaces, 2 were located in New York, 8 in Pennsylvania, 1 in Alabama, 7 in Ohio, 8 in Indiana, 2 in Illinois, 1 in Michigan and 1 in Wisconsin. When completed 29 of these furnaces will use coke or mixed anthracite coal and coke for fuel and 1 will use charcoal. Of the 4 rebuilding furnaces, 3 were in Pennsylvania and 1 was in Alabama. When rebuilt all 4 furnaces will use coke. The furnace to be revived will use charcoal. In addition 6 furnaces were projected and 2 furnaces partly erected on December 31. If built the projected furnaces will use mineral fuel.

The Westinghouse Electric & Mfg. Company has received a contract for two 1000-hp. turbine engines for the Panhandle Lumber Company, Spirit Lake, Iowa; a 750-hp. turbine engine for the Hard Rubber Company, College Point, L. I.; a 1000-hp. turbine engine for a plant in South Manchester, Conn., and a contract from the Armstrong Cork Company for nine electric motors for operating machines in its factory at Lancaster, Pa., having a total of 500 hp., varying from 25 to 100 hp. each.

The Sligo Iron & Steel Company, with plant at Connellsville, Pa., and sales office at Pittsburgh, is rebuilding the two heating furnaces in its 9-in. mill, and is also installing a new electric coal and cinder conveyor and an electric magnet for the handling of material.

The Pittsburgh & Lake Erie Railroad has completed an addition to its car shops at McKees Rocks, Pittsburgh, which will increase the facilities of the road for caring for its equipment.

The Fort Pitt Malleable Iron Company, Pittsburgh, will increase its capital from $150,000 to $300,000, and the Pittsburgh Tube Company will issue $25,000 in bonds.

The Ironton Iron Company, Ironton, Ohio, has increased its capital from $300,000 to $400,000.

More Furnaces Out.

Yet Active Capacity Gains Slightly.

Production in January 1,045,525 Tons.

Pig iron production in January has verified the promise of our statistics for January 1, which indicated that the country had come to a basis of about a million tons a month. The figures below show that the output last month was 1,045,525 gross tons, or about 200,000 tons less than in December, 800,000 tons less than in November, and 1,300,000 tons less than the record made in October. Steel works companies, which made a very drastic reduction in output, have been starting up furnaces in January, while merchant iron companies have put out a number of stacks. The furnaces starting up are of considerably greater caliber than most of those blowing out, so that with but 142 furnaces active on February 1, against 151 January 1, the capacity at work at the beginning of this month was 241,925 tons a week, or about 6800 tons more than at the beginning of the year.

In the diagram below the course of production in the past three months is contrasted graphically with the high level output of the greater part of 1907. The production of coke and anthracite iron in the past four months has been as follows:

	Gross tons.
October	2,336,972
November	1,828,125
December	1,234,279
January	1,045,525

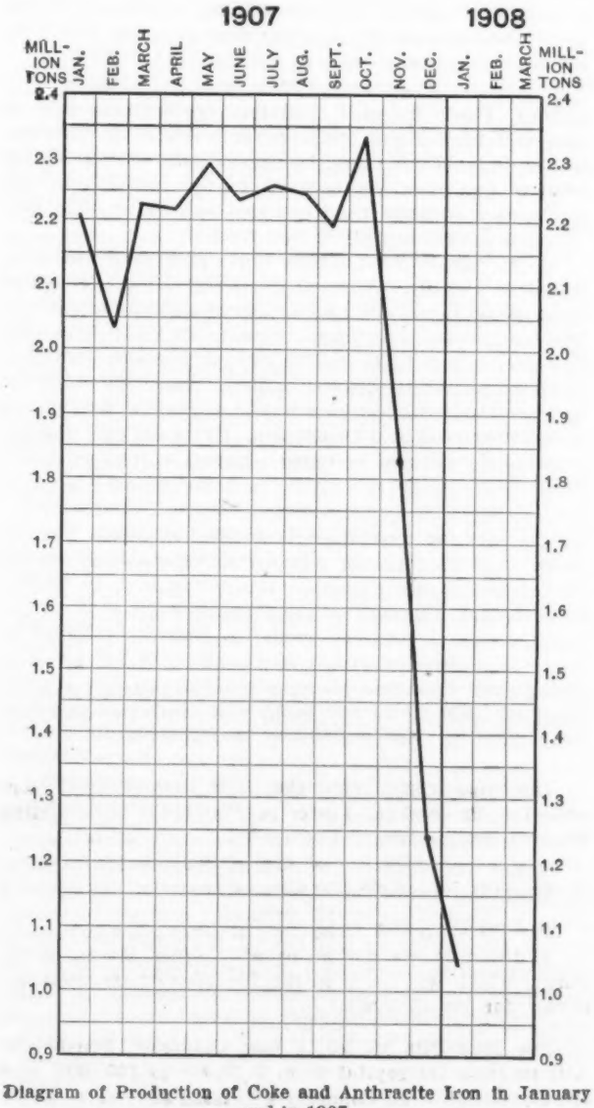

Diagram of Production of Coke and Anthracite Iron in January and in 1907.

January Production.

The table below gives the production of coke and anthracite furnaces in January and the four months preceding:

Monthly Pig Iron Production—Gross Tons.

	Sept. (30 days)	Oct. (31 days)	Nov. (30 days)	Dec. (31 days)	Jan. (31 days)
New York	150,264	152,710	111,407	86,993	82,962
New Jersey	32,877	30,574	24,079	22,555	22,447
Lehigh Valley	68,559	71,936	61,969	54,881	47,538
Schuylkill Val.	53,978	48,543	43,876	37,747	24,002
Lower Susquehanna and Lebanon Val.	59,580	67,286	47,683	31,090	20,323
Pittsburgh Dis.	509,497	533,078	409,024	258,412	305,575
Shenango Val.	144,978	158,315	124,159	76,086	69,149
West. Penn	133,906	143,078	130,192	105,671	60,355
Md., Va., and Kentucky	81,398	86,829	79,293	61,433	30,621
Wheeling Dis.	117,445	134,445	76,014	12,051	0
Mahoning Val.	162,644	180,968	129,334	68,776	64,437
Central and North. Ohio.	164,314	185,422	149,362	84,087	50,375
Hocking Valley and Hanging Rock	32,138	33,843	28,017	15,658	8,404
Mich.,Minn.,Mo., Wis., Colo.	79,112	81,155	59,697	48,950	38,172
Chicago Dis.	212,413	244,645	200,309	148,691	123,191
Alabama	142,766	146,354	118,190	94,810	80,066
Tennessee, Georgia and Texas	37,618	37,791	35,520	26,388	17,908
Totals	2,183,487	2,336,972	1,828,125	1,234,279	1,045,525

Capacity Active February 1 and January 1.

The following table gives the weekly capacity of coke and anthracite furnaces in blast February 1 and January 1:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	—February 1.— Number in blast.	Capacity per week.	—January 1.— Number in blast.	Capacity per week.
New York:					
Buffalo	14	6	15,642	6	13,048
Other New York	10	2	3,060	3	3,346
New Jersey	8	4	4,603	5	4,977
Spiegel	2	0	0	0	0
Pennsylvania:					
Lehigh Valley	25	10	9,005	13	10,382
Spiegel	3	2	617	2	658
Schuylkill Valley	14	4	4,539	4	5,182
Spiegel	1	1	882	1	921
Low. Susquehanna	7	1	2,153	2	2,975
Spiegel	1	0	0	0	0
Lebanon Valley	10	3	2,378	3	2,415
Pittsburgh District	45	27	71,013	26	70,127
Spiegel	3	1	618	1	596
Shenango Valley	20	7	15,920	6	10,740
Western Penn	27	8	10,850	13	19,516
Maryland	4	1	1,962	1	2,018
Wheeling District	14	0	0	0	0
Ohio:					
Mahoning Valley	18	10	21,740	6	8,748
Central and North. and Michigan	22	6	11,975	6	10,115
Hocking Valley and Hanging Rock	12	5	3,047	5	2,351
Illinois and Indiana	23	11	28,027	11	27,160
Spiegel	2	1	1,162	0	0
Minnesota	1	0	0	1	845
Wisconsin	6	2	2,750	1	1,650
Missouri	1	0	0	0	0
Colorado	6	3	5,120	3	6,817
The South:					
Virginia	23	5	2,877	5	3,741
Kentucky	7	0	0	2	1,582
Alabama	46	15	18,060	16	20,454
Tennessee	18	7	3,925	9	4,788
Georgia and Texas.	3	0	0	0	0
Totals	396	142	241,925	151	235,152

Production of Steel Companies.

The Northern steel companies approached closely in January their output in December, a number of furnaces of such companies having started up since the beginning of the year. Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland and Colorado companies show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.		Spiegeleisen and ferromanganese.	
	1906.	1907.	1908.	1907.	1908.
January	1,358,015	1,406,397	638,042	21,477	20,254
February	1,226,760	1,317,923	.....	19,444	.....
March	1,400,395	1,424,827	.....	31,091	.....
April	1,333,591	1,446,788	.....	26,527	.....
May	1,372,423	1,470,080	.....	28,822	.....
June	1,293,437	1,457,230	.....	30,942	.....
July	1,323,391	1,452,557	.....	25,343	.....
August	1,237,485	1,445,685	.....	23,696	.....
September	1,264,380	1,417,153	.....	30,270	.....
October	1,452,200	1,514,521	.....	35,105	.....
November	1,411,350	1,084,114	.....	21,861	.....
December	1,445,528	659,459	.....	19,480	.....

Changes in the Active List.

Among furnaces which went out of blast in January were Zenith in Minnesota, Oxford in New Jersey, one Crane, Macungie and Keystone in the Lehigh Valley, two Eliza and Soho in Allegheny county, two Cambria, Earlston, Emporium and one Saxton in western Pennsylvania, one Paxton in the Susquehanna Valley, Buena Vista in Virginia, Norton in Kentucky, one South Works of the Illinois Steel Company, one Ensley in Alabama (banked).

Among furnaces blown in between January 1 and February 1 were one Carrie, two Edgar Thomson and one Clairton in Allegheny county, one New Castle in the Shenango Valley, Belfont in the Hanging Rock Region, one Calumet and one Joliet in Illinois, one Mayville in Wisconsin, three Ohio and one Haselton in the Mahoning Valley.

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1903:

	Capacity per week.		Capacity per week.
February 1	241,925	July 1	408,617
January 1, 1908	232,652	June 1	443,092
December 1, 1907	347,372	May 1	452,031
November 1	491,436	April 1	439,564
October 1	511,397	March 1	403,157
September 1	507,768	February 1	405,792
August 1	513,471	January 1, 1905	377,879
July 1	528,170	December 1, 1904	357,846
June 1	523,220	November 1	334,249
May 1	524,538	October 1	319,249
April 1	496,456	September 1	291,573
March 1	511,035	August 1	246,092
February 1	492,359	July 1	272,301
January 1, 1907	507,397	June 1	336,107
December 1, 1906	513,860	May 1	368,244
November 1	500,580	April 1	337,257
October 1	469,665	March 1	308,751
September 1	441,426	February 1	273,692
August 1	449,908	January 1, 1904	185,636
July 1	460,570	December 1, 1903	244,156
June 1	472,622	November 1	273,715
May 1	484,031	October 1	353,142
April 1	484,240	September 1	360,197
March 1	479,737	August 1	353,681
February 1	482,156	July 1	384,825
January 1, 1906	463,673	June 1	388,178
December 1, 1905	475,814	May 1	373,496
November 1	460,449	April 1	386,215
October 1	445,468	March 1	347,424
September 1	412,563	February 1	335,239
August 1	410,088	January 1, 1903	346,073

The development of a water power project on the Manistee River is involved in the organization of the Manistee River Power Company, Traverse City, Mich., which was recently incorporated with a capital stock of $1,200,000. The company has secured rights along the river for a distance of 24 miles by the purchase of 10,500 acres. By the installation of a series of dams it is proposed to furnish electrical power for distribution to the cities of Cadillac, Elk Rapids, Charlevoix, Petoskey, Manton and Traverse City, besides a number of smaller towns. The officers of the company are as follows: Dan J. Albertson, president; Lieu P. Haskings, first vice-president; Stephen Lautner, second vice-president; Wm. H. Umlor, secretary; A. W. Bartak, treasurer.

At the meeting of the directors of Sterlingworth Railway Supply Company, Easton, Pa., January 28, the following officers were elected: President, F. W. Coolbaugh; vice-president, Edward Van Orden; treasurer, Clark Cooper; secretary, Kenneth Coolbaugh.

The Toronto Convention of the American Foundrymen's Association.

The Executive Committee of the American Foundrymen's Association has accepted the invitation of the Canadian foundrymen to hold the 1908 convention of the association in Toronto, in the second week of June. The two allied organizations, the Brass Founders' Association and the Foundry Supply Association, will meet at the same time. The Foundry Supply Association will present an exhibit of foundry supplies and equipment at this time, for which extensive preparations are now in hand. In the rooms of the Canadian Manufacturers' Association, Toronto, a meeting was held, January 23, to make preliminary arrangements for the convention. It was called by L. L. Anthes, vice-president of the American Foundrymen's Association, and the different organizations interested in the convention were represented. Those present were L. L. Anthes, Toronto Foundry Company; Richard Moldenke, secretary of the American Foundrymen's Association; H. H. Lane, secretary of the Foundry Supply Association; C. H. Wheaton, Dodge Mfg. Company, Toronto; S. H. Chapman, Ontario Wind Engine & Pump Company, Toronto; E. G. H. Holker, Wilkinson Plough Company, Toronto; David Reid, Canadian Westinghouse Company, Hamilton, Ont.; W. H. Bears, Detroit Foundry Supply Company, Detroit, Mich.; F. W. Moffat and J. K. Moffat, Moffat Stove Company, Weston; J. P. Murray; Ed. Freysing, chairman Toronto Branch Canadian Manufacturers' Association, and J. S. McKinnon, chairman Reception Committee, Canadian Manufacturers' Association, all three representing the Canadian Manufacturers' Association; J. C. Armor, editor *Canadian Machinery*.

Dr. Moldenke, after describing the work of the American Foundrymen's Association, made some suggestions as to the programme for the June convention, and hoped educational features would be given more attention than heretofore. H. M. Lane spoke in the interest of the Foundry Supply Association, saying that it would make a large exhibit of foundry equipment and would be glad to cooperate with Toronto foundrymen in providing entertainment for those attending the convention. Messrs. Moffat, Murray and Freysing referred to the enthusiasm with which the Canadian Manufacturers' Association had taken up the convention project.

L. L. Anthes read letters from prominent manufacturers in Canada promising co-operation. As indicating the interest taken by the Foundry Supply Association in the preparation of exhibits, it was stated that this association spent $12,000 simply for placing and arranging its exhibits at Philadelphia in 1907. Secretary Moldenke estimated that 2000 persons would be present at Toronto. As was the case at Philadelphia, it was decided that entertainment features at Toronto should be confined strictly to members of the American Foundrymen's Association, Foundry Supply Association, Brass Founders' Association and the Associated Foundry Foremen. The Toronto representatives have tendered two buildings for the use of the Foundry Supply Association and an auditorium for the meetings of the foundrymen, the latter being far enough removed from the exhibit buildings so that the meetings will not be disturbed by the noise of machinery. The two places of exhibit are the Process Building and Machinery Hall. The latter is equipped with shafting and both direct and alternating current for power and lighting. Provisions are also to be made for compressed air and water. The Process Building is about 200 ft. distant. Power is available in this building from shafting operated by motors.

Those who desire to exhibit at Toronto are asked to communicate with H. M. Lane, secretary of the Foundry Supply Association, 1924 Prospect avenue, Cleveland. Those who desire to join one of the other associations and attend the convention may communicate with the secretary, Dr. Richard Moldenke, Watchung, N. J., for the American Foundrymen's Association; with A. M. Fairlie, secretary of the Brass Founders' Association, Copper Hill, Tenn., or with F. C. Everitt, J. L. Mott Iron Works, Trenton, N. J., secretary of the Associated Foundry Foremen.

NEWS OF THE WORKS.

Iron and Steel.

The Canonsburg Steel & Iron Works, Canonsburg, Pa., has started up four of its six hot mills after a shutdown of several weeks and with a fair production ahead.

L. W. Searles, general manager of the Embree Iron Company, at Embreeville, Tenn., states that his company blew in its furnace February 1. He thinks the market shows good signs of improvement.

Citico Furnace, at Chattanooga, Tenn., which has been closed down for several weeks for repairs, is to resume operations early this month. The coal mines of the company at Soddy will be opened up at once.

The blast furnace at Rome, Ga., formerly operated by the Rome Furnace Company has been leased by Thos. J. Deane, contractor. In November, 1907, Mr. Deane leased the ore mines belonging to the same company, located at Lyerly, Ga., and consisting of 1800 acres of red fossil ore, which, it is stated, averages 53 per cent. metallic iron. The furnace will be put in good condition as soon as possible. Extensive improvements are contemplated.

The Atikokan Iron Company, which blew out its furnace at Port Arthur, Ont., for the winter on December 13, expects to put it in blast again about May 1.

The furnace of the Ironton Iron Company, Ironton, Ohio, on which construction work has been in progress since June, 1907, will probably be ready for blast in February.

The Ivanhoe Furnace Company, Ivanhoe, Va., was the only maker of Bessemer pig iron in Virginia in 1907.

The Lehigh Iron & Steel Company, Allentown, Pa., is dismantling its No. 2 Furnace, which was abandoned some time ago. The No. 1 Furnace may also be dismantled. Both stacks have been idle for several years.

The No. 1 Furnace of the Pennsylvania Steel Company at Lebanon, Pa., which was banked early in January for repairs, is now in blast. The company's other furnace at Lebanon, which was banked December 1, is now out of blast and will be relined.

In January a number of blast furnaces in the Pittsburgh District were blown out, while some furnaces were started. One of the three stacks of the Carnegie Steel Company at Clairton was blown in January 5, one of the Edgar Thomson stacks on January 10, a second Edgar Thomson on January 20 and one Carrie stack was blown in January 4. One of the five Eliza furnaces of the Jones & Laughlin Steel Company was blown out January 9, and a second Eliza stack was blown out January 22. Soho Furnace of this company was blown out January 9. No. 1 Monongahela Furnace of the National Tube Company, at McKeesport, was started January 10, while No. 4 stack was started January 11.

The blast furnace of the Zenith Furnace Company, Duluth, Minn., was blown out January 24 for relining and repairs.

The Bessemer Rolling Mill of the Tennessee Coal, Iron & Railroad Company at Bessemer, Ala., has resumed operations.

The Gadsden, Ala., furnaces of the Alabama Consolidated Coal & Iron Company are idle. At the Ironaton plant No. 2 furnace went in blast January 7 and No. 1 furnace January 30.

The Belfont Iron Works Company, Ironton, Ohio, put its furnace in blast February 1. It was idle in December and January.

The Wisconsin Steel Company blew in its Furnace A at South Chicago, Ill., January 20, and both furnaces are now in blast.

South Works Furnace E of the Illinois Steel Company blew out January 17, and Furnace I at the Joliet Works blew in January 21.

General Machinery.

The Killing Molding Machine Company, Davenport, Iowa, has bought, and will move its machine shop and foundry into, the plant formerly occupied by the Simplex Washing Machine Company.

The George A. Hogg Iron & Steel Foundry Company, Pittsburgh, has received an order from the Pennsylvania Steel Pulley Company, North Side, Pittsburgh, for a 38-in. squaring shear, and an order from the West Leechburg Steel Company, West Leechburg, Pa., for a 16-in. roll lathe.

For the purpose of securing a new charter permitting the issue of preferred stock the Domestic Gas Company, Little Rock, Ark., has been reincorporated under the name of the Domestic Gas Mfg. Company. The capital stock of the new company is $300,000, divided into 12,000 shares, one-half of which is preferred and one-half common stock. The company is engaged in the manufacture of gas producer equipment, and is officered as follows: H. L. Horton, president; B. P. Dwight, vice-president; Park Heaton, secretary and treasurer; M. Laux, general manager.

The Beaumont Iron Works Company, operating a large foundry and machine shop in Beaumont, Texas, has been placed in the hands of A. B. Brock as receiver.

Frederick P. Bellamy has been appointed receiver for Rossiter, McGovern & Co., New York, dealers in second-hand machinery, making a specialty of electrical equipment. The company has a capital stock of $300,000 and is well known in the machinery trade.

The Webb Machine Works, Monongahela, Pa., and the Capell Fan & Engineering Company, Pittsburgh, were consolidated February 1, under the style of the Webb & Capell Fan & Engineering Company. The Webb Machine Works operates the plant that was formely known as the Monongahela Mfg. Company, and has been enlarged so that 175 additional men are now employed.

Wagner & Schnitzer, Baltimore, Md., whose architectural and ornamental iron works was recently destroyed by fire, is equipping a new plant with modern machinery.

The Sikeston Machine Works, Sikeston, Mo., has incorporated with a capital stock of $4000 to manufacture special machinery and to do general machine repairing. The company has equipped its plant, but will likely need other machines later. Henry I. Cohm is president, and E. A. Cart, secretary and manager.

Power Plant Equipment.

The Huron Cement Company, Alpena, Mich., has let a contract for the installation in its plant of a system of electric lights and power to the Thorne Electric Company, Bay City, Mich. The electrical machinery for the system is being furnished by the Westinghouse Electric & Mfg. Company.

Contracts have been let for a new power house and some machinery equipment for the municipal electric light plant at Waterloo, Wis. Bids are yet open for a steel smokestack and breeching and a 16-ft. flywheel for a Corliss engine. Eugene Porter is the engineer in charge.

The Department of Electric Lighting of Holyoke, Mass., has awarded the contract for four 400-hp. boilers to the Babcock & Wilcox Company, New York, and for the mechanical stokers to the Murphy Iron Works, Detroit, Mich.

A change has been made in the Odlum-Taylor Boiler Company, Memphis, Tenn. R. A. Odlum has resigned and has been succeeded as president by T. K. Riddick. The general management of the company will be in the hands of the former vice-president and secretary, T. Harbert Taylor and Frank O'Connor. One of the specialties of the company is hemispherical bottom water tanks supported on steel towers.

The Kentucky Electric Company, Louisville, Ky., intends to erect a two-story dynamo building to cost about $25,000. Robert E. Hughes is president, and Lewis S. String, chief engineer.

Foundries.

The new Phœnix Foundry & Machine Company, Springfield, Mo., is preparing to extend its plant by the erection of a new foundry, 50 x 87 ft., the equipment for which is already at hand. It is expected that this addition to the works will be ready for operation about May 1.

The Milwaukee Ornamental Metallic Mfg. Company, 216 Lake street, Milwaukee, Wis., at a meeting of its stockholders January 2, decided to increase its capital stock from $1000 to $10,000, and at the same time the title of the company was changed to the Milwaukee Bronze Casting Company. Owing to the rapid growth of its business it has become necessary to enlarge the plant, and to this end a new and modern foundry will be built. The officers are Albert G. Seeboth, president; M. Seeboth, secretary and treasurer; Caspar Reichl, general manager.

The recent reference in these columns to the Bessemer Soil Pipe Company, Bessemer, Ala., was somewhat in error. Only one change was made in the management of the plant on the first of the year, when W. B. Graham was appointed foundry foreman. The plant is being operated under the same management as during the past year, William Ivy of St. Louis, being president. N. O. Nelson of St. Louis is the principal owner.

The Lynchburg Foundry Company, Lynchburg, Va., manufacturer of cast iron pipe, reports quite a revival of business from the interruption caused by the money panic. The works are running full in all departments at present, and business is booked to insure operations up to capacity for three to four months.

The Anniston Foundry & Machine Company, Anniston, Ala., has resumed operations after an idleness of about three months.

The Campbell Mfg. Company has recently been organized and will build a plant at Gadsden, Ala., for the manufacture of plumbers' supplies. Plans have been submitted for the foundry buildings, and work will commence promptly. The authorized capital stock is $50,000, with $35,000 paid in. Otto Agricola of Gadsden was elected president, and R. W. Campbell, who has been in charge of the Coosa Pipe & Foundry Company's plant at Gadsden, was elected vice-president and general manager.

Bridges and Buildings.

The Mankato Mfg. Company, Mankato, Minn., has been awarded a contract, amounting to about $13,000, for furnishing structural steel required in the construction of the Home for Feeble Minded at Chippewa Falls, Wis.

F. L. Heughes & Co., architectural and structural iron works, Rochester, N. Y., have incorporated under the same name, the business to be continued as heretofore under the same management. F. L. Heughes is president; H. C. Peifer, vice-president; L. M. Mills, secretary. These officers, with W. A. Heughes, constitute the Board of Directors.

Fires.

The foundry of C. C. Force & Son, Madison, N. J., was recently damaged $10,000 by fire.

The machine shop of George Thomson, Luzerne, Pa., was burned January 25, the loss being about $8000.

The packing plant of Nelson Morris & Co., Kansas City, Kan., was damaged $100,000 by fire January 28.

The municipal electric light and power plant of Colby, Wis., was recently damaged by fire to the extent of about $4000. No insurance was carried.

The plant of the Canadian Tin Plate & Sheet Steel Company, Morrisburg, Ont., was damaged by fire January 27.

The plant of the Purcellville Foundry Company, Purcellville, Va., was damaged $3000 by fire January 27.

The factory of the Diamond Window Glass Company, Gas City, Ind., was destroyed by fire January 31, the loss being about $50,000.

The plant of the Seneca Chain Company, Kent, Ohio, was damaged $10,000 by fire January 25.

The plant of the Atlantic Compress Company, Americus, Ga., was destroyed by fire February 2.

The plant of the Elnora Foundry & Machine Works, Elnora, Ind., was burned January 27.

The plant of the Eisbury Electric Company, Eisbury, Mo., was destroyed by fire January 31.

The power plant of Van Alen & Co., Northumberland, near Sunbury, Pa., was destroyed by an explosion of a boiler February 3. The loss is estimated at $50,000.

Hardware.

The Superior Mfg. Company, which was established some months ago at Sterling, Ill., for the manufacture of washtubs and washing machines, having outgrown its original quarters, has moved across the river to Rock Falls into a larger plant with improved facilities. The present proprietors of the company are E. W. Aument and K. E. Bills.

The Evan L. Reed Mfg. Company, Sterling, Ill., manufacturer of collapsible metal racks, has by its purchase of the business and patents of the Sterling Specialty Company added a complete line of rat and mouse traps to its list of products.

The fire in the works of the W. H. Davenport Fire Arms Company, Norwich, Conn., January 27, was confined to an annex building in which one department of the business was conducted and which was totally destroyed. The loss is entirely on goods in process and very little on machinery, as the building was devoted chiefly to bench work. The 40 men or more employed in the department have been transferred to the main building and business resumed on the same basis as before the fire. The property destroyed was covered by insurance and the money loss to the company is believed to be small. The fire also seriously damaged the building occupied by the Norwich Belt Mfg. Company.

Miscellaneous.

At a recent meeting of the Board of Directors of the Buck's Stove & Range Company, St. Louis, Mo., the following officers were elected: James W. Van Cleave, president; H. C. Thompson, vice-president; Lee W. Van Cleave, second vice-president and general manager; Jones T. Templeton, secretary; P. A. Pantlin, assistant secretary; Maurice A. Murray, treasurer; Frederic W. Gardner, chairman of the board.

The Muncie Gas Light & Fuel Company, Muncie, Ind., recently suffered a loss by fire which destroyed a one-story brick building, 25 x 40 ft., used for the repair shop and storage of stock supplies. The building will be rebuilt at once.

The Green-Beebe-Weed Company, New York, which was recently incorporated, will not engage in the manufacture of motors, etc., as was reported, but will deal in automobile supplies of every kind. George E. Proctor is president; Livingston Ely, first vice-president; Walter L. Weed, second vice-president; Joseph D. Brockway, 207 Broadway, secretary; John A. Green, treasurer, and H. C. Beebe, assistant treasurer.

The Schreiber Mfg. Company has been incorporated at Hammond, Ind., with $30,000 capital stock, to manufacture agricultural implements. The directors are Ernest G. Schreiber, August E. Jarnecke, Gustave Muenich, Carl E. Bauer and Paul H. Mueller.

The Crawfordsville Wire-Bound Box Company, Crawfordsville, Ind., has increased its capital stock from $20,000 to $40,000.

George P. Keating and Edward R. O'Malley have been appointed receivers for the National Battery Company, Buffalo, N. Y. The assets of the company are said to be far in excess of the liabilities.

The Franco-American Leather Company has secured buildings in Vineland, N. J., containing about 10,000 sq. ft. of floor space, which it will equip with about $40,000 worth of machinery for the manufacture of Krack-Not leather, which is an artificial skin reinforced by cotton textile of great strength and durability. This material cannot be told from leather and has excellent wearing qualities. Arrangements have been made for the coating machines, &c., and the necessary boilers, engines and shafting are installed. The offices will be located at 547 Drexel Building, Philadelphia, and the company will also continue to run its present factory at Quincy, Mass. C. R. de Montiord is president; Albert Touchet, vice-president; C. Willard Carter, secretary; Thomas L. Fenerty, treasurer, and M. F. Coughlin, assistant secretary and treasurer.

Trade Publications.

Vertical Gas Engines.—The Rathbun-Jones Engineering Company, Toledo, Ohio. Pamphlet. Pages 23. Describes a line of double and triple cylinder vertical gas engines manufactured by the company, which was recently organized to succeed the S. M. Jones Company. Constructive features of the machine are illustrated in cutaway and sectional views, which expose the gear and other mechanism. The efficiency of the engine under various loads is shown in a diagrammatic chart, which illustrates the fuel curve taken from shop tests.

Concrete Reinforcement.—Expanded Metal & Corrugated Bar Company, St. Louis, Mo. Catalogue. Size 8½ x 10½ in.; pages 112. Devoted to illustration and description of various styles of corrugated bars for concrete reinforcing, together with drawings and engravings showing the different methods of their application to floors and foundations. It is profusely illustrated with views of concrete buildings completed and under construction. Transverse sections of floors and beams, and pillar plans of reinforcing, show the disposition of this material. Several pages concern reinforced concrete construction in railroad and highway bridges, smokestacks, sewer work and other special forms of construction. Formulas are given for figuring ultimate strength and working stresses and also a number of valuable tables.

Chains, Milling Cutters and Machinery.—The Whitney Mfg. Company, Hartford, Conn. Abbreviated catalogue. Sets forth the company's line in concise but comprehensive form. Under the chain department are included riveted and detachable roller chains and bushing chains and their parts, the Whitney block chains, a new safety connecting link, and the Wizard silent chain. In the miscellaneous department are shown machine keys and key seat cutters for the Woodruff system of keying, and Presto chucks, collets and friction tapping devices. The machine department comprises hand milling machines, water tool grinders, wheel truing device for the tool grinder, upright milling machine vises, arbors and collets for Whitney cutters for Woodruff system of keying, and a fixture used for cutting worm gears on a milling machine.

Tapping, Riveting and Screw Slotting Machinery.—Harvey Hubbell, Inc., Bridgeport, Conn. Catalogue. Size 3¾ x 5½ in.; pages 27. Concerns the company's standard line of tapping machines and illustrates the ¼, ⅜, ½ and ¾ in. sizes (the ½-in. size is also made as a double machine). Riveting machines of ⅛ and 3-16 in. sizes are also illustrated, the former in both bench and pedestal types. The company's screw slotting machine is included. The list of machine screws which the company makes contains a page devoted to cuts showing the different styles of heads, together with points from which the length of screw is measured in order to insure accuracy of understanding in placing orders.

Economy Tie Plates.—Spencer Otis Company, general offices Railway Exchange Building, Chicago. Pamphlet catalogue in paper covers. Illustrates and describes a line of rolled steel tie plates of various patterns. Diagrams are furnished suggesting various methods of punching for right and left hand spiking and to fit the varying conditions of track work.

Feed Water Heaters.—Harrison Safety Boiler Works, Seventeenth street and Allegheny avenue, Philadelphia, Pa. Pamphlet. Title, "What Scale Does to Boilers and What Is Gained by Keeping It Out of Them." Presents information of value to designers, managers and operators of steam boiler plants. The data gathered from various authorities indicates that, by reason of scale, the average boiler plant wastes from 5 to 15 per cent. of the coal consumed, while the loss from boiler cleaning and repairs, loss of service and shortened life is even greater. The hot process of water purification in connection with the Cochrane open feed water heater is the remedy proposed.

Fuel Economizers.—Green Fuel Economizer Company, Matteawan, N. Y. Bulletin No. 113. This is a reprint of a paper read before the New York Railway Club by R. D. Tomlinson, showing by a careful analysis of tests and monthly records that the Green fuel economizers in the Manhattan power station of the Interborough Rapid Transit Company, New York City, are paying a net rate of 30.5 per cent. upon the initial outlay. Illustrations of the economizer and the exterior of the plant are given.

The Iron and Metal Trades

There seems to have been some misapprehension on the point that at recent conferences it was decided to establish Lake Ore prices for the coming season, at the level of the past season. What was done was that the consuming interests represented suggested such action to the sellers of Ore. The latter have not yet decided what course to pursue, but it is possible that they may do so before this week is out.

It is yet too early to expect clear evidence whether buyers will decide to place what orders they have at once, in view of the general disposition of steel makers to maintain prices. So far as they have gone the indications of a buying movement are not encouraging. There is some improvement in the volume of business, but it is slight as yet, and as a matter of fact the markets for finished Iron and Steel have not been seriously tested.

Production of Coke and Anthracite Pig Iron was only 1,045,525 tons in January, as compared with 1,234,279 tons in December, 1,828,125 tons in November and 2,336,-972 tons in October. The most rapid restriction took place during that period with the steel furnaces, which fell off from 1,514,000 tons in October to 660,000 tons in December and 638,000 tons in January. The merchant furnaces cut down their production more gradually, dropping from 822,000 tons in October to 744,000 tons in November, to 575,000 tons in December and 407,000 tons in January. Even then, they have quite generally increased their stocks on hand, to judge from partial reports. Recently there has been some blowing in on the part of steel works furnaces, while merchant stacks have been blowing out. The result is that there were active on February 1 142 furnaces with a capacity of 241,925 tons, as compared with 151 furnaces on January 1, with 235,152 weekly capacity.

While the Eastern markets are fairly firm, the furnaces in the Central West are making lower prices and show weakness. In some instances they are underselling local furnaces in tidewater markets. Low figures are reported to have been made on about 9000 tons of Foundry Iron, for delivery during the last three quarters of the year at Detroit, the business having been taken by a local furnace. In central New York, one mill closed a contract for 30,000 tons for delivery during 1908, a New York furnace taking the order.

Chicago reports the appearance in that market of an inquiry for 60,000 tons of Steel Rails emanating from a leading Western road, so that there is now under negotiation in that market upward of 100,000 tons.

Some new business is coming up in Structural material, but fabricators are making low prices on work, in the obvious efforts to keep their shops going.

The Western makers of Iron Bars, at a meeting held at Chicago yesterday, decided to advance the price on Iron Bars to 1.50c., Pittsburgh, for the Pittsburgh District, and 1.47c., Pittsburgh, for Chicago and points further West. Following their action, the Eastern Iron Bar makers, at a meeting held to-day, agreed to hold to 1.50c., Pittsburgh, which is equivalent to 1.66c., tidewater. It is hoped that this action will put a stop to the demoralization in the Iron Bar trade, which was seriously affecting collateral industries and was threatening the stability of Steel Bar prices.

The Cast Iron Pipe trade is dull and low prices were made in the lettings of about 4800 tons at Minneapolis and St. Paul.

Klondike Coke has sold as low as $1.70 to $1.75, at oven, and close figures have also been made on standard Connellsville Coke.

Copper is lower, and is now obtainable at 13.62½c. for Electrolytic and 13.75c. for Lake.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Feb. 5, 1908.	Jan. 29, 1908.	Jan. 1, 1908.	Feb. 6, 1907.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	**$18.25**	$18.25	$18.00	$26.50
Foundry No. 2, Southern, Cincinnati	*15.75*	16.00	16.25	26.00
Foundry No. 2, Local, Chicago	*18.00*	18.00	18.50	25.50
Bessemer, Pittsburgh	*17.90*	18.90	19.40	22.85
Gray Forge, Pittsburgh	*16.15*	16.90	17.65	22.35
Lake Superior Charcoal, Chicago	*21.00*	22.00	23.50	27.00
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	28.00	28.00	28.00	29.50
Forging Billets, Pittsburgh	30.00	30.00	30.00	36.00
Open Hearth Billets, Phila	**30.40**	30.40	30.00	33.00
Wire Rods, Pittsburgh	**35.00**	35.00	34.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	**13.00**	12.50	12.00	18.00
Steel Rails, Melting, Phila	**13.50**	12.00	11.50	18.75
Iron Rails, Chicago	**17.00**	17.00	15.00	27.00
Iron Rails, Philadelphia	17.50	16.50	17.50	27.50
Car Wheels, Chicago	*18.50*	18.50	20.00	24.50
Car Wheels, Philadelphia	*17.00*	17.00	19.00	22.50
Heavy Steel Scrap, Pittsburgh	**14.00**	14.00	12.50	18.25
Heavy Steel Scrap, Chicago	**12.50**	12.00	10.75	16.00
Heavy Steel Scrap, Phila	**13.50**	12.00	11.50	18.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	*1.65*	1.55	1.75	1.93½
Common Iron Bars, Chicago	*1.65*	1.55	1.75	1.81½
Common Iron Bars, Pittsburgh	*1.50*	1.40	1.60	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.76	1.74½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.84½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.70
Beams, Tidewater, New York	1.86	1.86	1.86	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.70	1.70	1.70	1.80
Skelp, Sheared Steel, Pittsburgh	1.80	1.80	1.80	1.90
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	*2.40*	2.40	2.50	2.50
Wire Nails, Pittsburgh	2.05	2.05	2.05	2.00
Cut Nails, Pittsburgh	2.00	2.00	2.00	2.05
Barb Wire, Galv., Pittsburgh	2.50	2.50	2.50	2.45
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	**13.75**	14.00	13.62½	25.00
Electrolytic Copper, New York	**13.62½**	14.00	13.50	24.75
Spelter, New York	**4.70**	4.70	4.20	7.00
Spelter, St. Louis	**4.55**	4.60	4.05	6.75
Lead, New York	3.75	3.75	3.75	6.30
Lead, St. Louis	3.60	3.60	3.60	6.10
Tin, New York	**28.60**	27.80	27.25	42.50
Antimony, Hallett, New York	**9.00**	9.00	8.50	25.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb	*$3.89*	$3.89	$4.09	$4.09

Chicago.

FISHER BUILDING, February 5, 1908.—(*By Telegraph.*)

It can hardly be questioned that doubt as to the stability of prices has been a factor of considerable importance in retarding trade movements, and it therefore seems reasonable to expect that if confidence in the stability of present values were established freer buying would ensue. The decision reached by the various producers, as the result of a conference held last week in New York by the general committee and subcommittees appointed to canvass and report upon market conditions, to make no change in existing price schedules on Ore, Pig Iron, Steel and Finished products, has in consequence a significant bearing upon this phase of the situation. How far reaching its effects will be cannot be foretold, but its influence upon the market will be watched with interest. The appearance this week of another inquiry for an important tonnage of Standard Section Rails inspires hope of a renewal of activity in this direction. A leading Western road is asking prices on 60,000 tons, and the impression prevails that orders for the entire quantity will be placed in the near future. This makes a total of 110,000 tons of prospective Rail business that has developed within the past two weeks. There continues to be a moderate increase in the demand for Track Supplies and, because of the meager buying of the last few months, further improvement in this trade is anticipated. No movement of significance in Structural Material is observed. Contracts on which closure is reported for the week amount to 2700 tons, the greater portion of which was for railroad bridge work. All of the finishing mills at the South Works

of the Illinois Steel Company are idle this week, the last to suspend operations being the No. 1 Rail mill. It is likely, however, that the accumulation of specifications will permit an early resumption in some departments. The new Steel Bar mill of the Calumet Steel Company is now practically completed, and expects to start up for its initial run about February 15. The recent spurt of activity in Scrap begins to show signs of lessening. Aside from a fair demand for Melting Steel, consumers are giving but little support to the market.

Pig Iron.—The market is being eagerly scanned by all interests for any signs of returning strength, but so far none of strong promise has developed. In the opinion of closely observant sellers, the majority of consumers have enough Iron due on contracts and in their yards to cover their expected requirements for at least 60 days. No sales of important tonnage are reported for the past week, and it is conservatively estimated that the entire transactions in the market during that period have scarcely exceeded 2000 tons. What business there is seems to be merely for the covering of casting contracts as they are secured, which are apparently not of large extent. Prices are nominally unchanged, with the exception of a decline of $1 in Jackson County and Kentucky Silveries, in which there is practically nothing doing, and Lake Superior Charcoal. There is a singular lack of uniformity in the quotations made by various interests. One prominent selling agency of Northern Iron has fixed its minimum price for No. 2 Foundry at $18.50, Chicago, while another furnace, governed by different conditions as respects analysis and circumstances controlling furnace operations, would probably be willing to accept orders at 50c. to $1 below this price. One sale of 500 tons of Southern Iron for second quarter delivery at $13.25, Birmingham, is reported. On the other hand, $13, Birmingham, is being freely offered for spot Iron en route on track, with a strong intimation that this price would be shaded considerably for second quarter business. Despite the efforts that have been made to harmonize price levels, it is quite apparent that the market views of various producers, both North and South, are by no means in accord. The following prices are for February and March delivery, f.o.b. Chicago:

Lake Superior Charcoal	$21.00 to $22.00
Northern Coke Foundry, No. 1	18.50 to 19.00
Northern Coke Foundry, No. 2	18.00 to 18.50
Northern Coke Foundry, No. 3	17.50 to 18.00
Northern Scotch, No. 1	19.00 to 19.50
Southern Coke, No. 1	17.85 to 18.35
Southern Coke, No. 2	17.35 to 17.85
Southern Coke, No. 3	16.85 to 17.35
Southern Coke, No. 4	16.35 to 16.85
Southern Coke, No. 1 Soft	17.85 to 18.35
Southern Coke, No. 2 Soft	17.35 to 17.85
Southern Gray Forge	15.35 to 15.85
Southern Mottled	15.10 to 15.60
Malleable Bessemer	18.50 to 19.00
Standard Bessemer	20.40 to 20.90
Jackson Co. and Kentucky Silvery, 6 %	21.40 to 21.90
Jackson Co. and Kentucky Silvery, 8 %	23.40 to 23.90
Jackson Co. and Kentucky Silvery, 10 %	25.40 to 25.90

(*By Mail.*)

Billets and Rods.—Aside from a few small orders for Axle Billets, which represent requirements for finishing up contracts in hand, there is practically no movement in the market. We continue to quote Forging Billets at $33 to $34, in Chicago. Wire Rods remain firm at the following quotations: Bessemer, $35; Basic, $36; Chain, $37, Pittsburgh.

Rails and Track Supplies.—From recent inquiries received for Standard Section Rails, it may reasonably be expected that orders for significant tonnage will soon begin to develop. In addition to the 50,000 tons under consideration last week, another inquiry for 60,000 tons has been put out by a prominent Western road. All of this tonnage will probably be placed as soon as the roads are able to finance the purchase. Spikes and Bolts continue in moderate demand, but Light Rails are again somewhat neglected. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 1.90c. to 2c., according to delivery; Track Bolts, 2.40c. to 2.50c., base, Square Nuts, and 2.55c. to 2.65c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—The amount of Structural tonnage booked last week was in the aggregate slightly in excess of that of the week previous, but, at that, the total volume of business is small. Included in the business booked was 1600 tons for miscellaneous railroad work placed by the Chicago, Burlington & Quincy and Chicago & Northwestern with the American Bridge Company, which also secured a contract of 350 tons from Goldfield, Nev., for mine construction work. The St. Paul placed 750 tons of bridge material with the Pennsylvania Steel Company. None of the larger building contracts now pending have been closed, though it is believed that such of these as may have been deferred in the hope of a decline in prices may, in view of the reaffirmation made last week by the mills, now be induced to come into the market. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—Notwithstanding reports to the contrary, the No. 1 and 2 Plate mills of the Illinois Steel Company will not start up this week. Just how soon the accumulation of Plate tonnage will warrant resumption cannot be definitely foretold, but there is some prospect of these mills being started up within the next week or two. The incoming tonnage in new orders and specifications continues light, and includes mainly only scattering requirements arising from unfinished contracts. We quote for shipment from mill as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in, 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.10c. to 2.20c.; from 72 to 96 in. wide, 2.20c. to 2.30c.; 3-16 in. up to 60 in. wide, 2.20c. to 2.35c.; 72 in. wide, 2.40c. to 2.50c.; No. 8 up to 60 in. wide, 2.20c. to 2.25c.; Flange and Head quality, $0.25c. extra.

Sheets.—While business continues very moderate in volume, it shows steady improvement. Manufacturers seem to be buying a little more freely, but neither they nor the jobbers are asking for more than will take care of current requirements. Mill prices are reported to be firmly held at usual quotations. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 to 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c. Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c. Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—Bar Iron mills report a moderate improvement in bookings, and their schedules are running a little fuller. There is an extremely light demand for Steel Bars, and mills are operating intermittently, as accumulation of specifications permits. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.55c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—It can be said that since the first of the year the business of each week has shown a slight increase over the one preceding, but at that it is yet far below normal. The bookings in new orders at the present time are hardly 25 per cent. of normal. Owing to the severely cold weather of the past week or 10 days, there has been an extremely light demand for Pipe from warehouse stocks. Store prices continue low and irregular, but jobbers express the hope that betterment in this respect will follow the recent reaffirmation of prices. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 72 to 72½ per cent. on Black Steel Pipe, ¾ to 6 in. About four points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—There is very little doing in Merchant Tubes, orders being restricted to immediate needs, which are light. A little more activity is noted in Locomotive Tubes, but the buying seems to be of an emergency character rather than for stock supplies. Mill quotations for future delivery, on the base sizes, are as follows: 2⅜ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft. and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 5 in.	60	47½	47½
6 in and larger	50	35	..

Merchant Steel.—Manufacturers and jobbers continue to order and specify sparingly, and business is correspondingly quiet. Prices are reported firm in practically all ma-

terial under this head save Shafting, which is occasionally shaded when a moderate concession will secure desirable orders. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1½ x ½ in., 1.93c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.78c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c., and 1⅛ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

Cast Iron Pipe.—Contracts for 4800 tons were awarded by the cities of St. Paul and Minneapolis. The 1600 tons placed by the former was taken by the Dimmick Pipe Company and the contract for the latter city, 3200 tons, was awarded to the United States Cast Iron Pipe & Foundry Company. No other prospective municipal lettings are reported, and only a very moderate amount of business in miscellaneous orders is being offered. We quote, per net ton, Chicago, as follows: Water Pipe, 4-in., $30; 6 to 12 in., $29; 16-in. and up, $28, with $1 extra for Gas Pipe.

Old Material.—Stocks in the hands of consumers, according to all reports, are unusually low, but there seems to be little buying except for present needs. There has been some inquiry within the past week for Melting Steel, but actual transactions involve only a moderate amount of tonnage. It is essentially a dealers' market, and until more activity develops among mills and melters no heavy demand is expected from these sources. Prices hold firm at the present level, with a slightly stronger tendency on some grades of rolling mill material and Melting Steel. The Great Northern Railroad is this week offering a list of 5000 tons to be closed February 7, in which there are 2000 tons of Iron Rails and 400 tons of Car Wheels. Very few old Car Wheels reach the open market, as they are principally absorbed by the Car Wheel foundries on exchange contracts; in the absence of actual sales reported, quotations are, therefore, only nominal. We quote, per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	$17.00 to $17.50
Old Steel Rails, rerolling	13.00 to 13.50
Old Steel Rails, less than 3 ft	13.00 to 13.50
Relaying Rails, standard sections, subject to inspection	22.00 to 25.00
Old Car Wheels	18.50 to 19.00
Heavy Melting Steel Scrap	12.50 to 13.00
Frogs, Switches and Guards, cut apart	12.75 to 13.25
Mixed Steel	9.50 to 10.00

The following quotations are per net ton:

Iron Fish Plates	$15.00 to $15.50
Iron Car Axles	16.50 to 17.00
Steel Car Axles	15.50 to 16.00
No. 1 Railroad Wrought	12.25 to 12.75
No. 2 Railroad Wrought	10.25 to 10.75
Railway Springs	11.50 to 12.00
Locomotive Tires, smooth	15.00 to 15.50
No. 1 Dealers' Forge	9.75 to 10.25
Mixed Busheling	8.00 to 8.50
Iron Axle Turnings	7.50 to 8.00
Soft Steel Axle Turnings	7.50 to 8.00
Machine Shop Turnings	7.50 to 8.00
Cast Borings	5.00 to 5.50
Mixed Borings, &c	5.00 to 5.50
No. 1 Mill	7.50 to 8.00
No. 2 Mill	6.50 to 7.00
No. 1 Boilers, cut to Sheets and Rings	7.50 to 8.00
No. 1 Cast Scrap	13.00 to 13.50
Stove Plate and Light Cast Scrap	11.50 to 12.00
Railroad Malleable	11.50 to 12.00
Agricultural Malleable	10.50 to 11.00
Pipes and Flues	9.00 to 9.50

Metals.—As far as demand is concerned, the Metal market throughout is sagging and listless. Few sales of Copper are reported, and such as have been made comprise only small lots for current requirements. Prices hold firm, though without tendency toward advance. Old Metals continue quiet, with no change in prices. We quote as follows: Casting Copper, 14¼c.; Lake, 14¾c. to 15c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 30c.; small lots, 31½c.; Lead, Desilverized, 4c. to 4.05c., for 50-ton lots; Corroding, 5.15c. to 5.25c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.60c.; Cookson's Antimony, 13c., and other grades, 11c. to 11½c.; Sheet Zinc is $7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13½c.; Copper Bottoms, 12c.; Copper Clips, 12c.; Red Brass, 13c.; Yellow Brass, 10½c.; Light Brass, 6½c.; Lead Pipe, 3¾c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

Harry E. McCoy, sales agent, 619 Ferguson Building, Pittsburgh, will represent in the Pittsburgh District Alfred Box & Co., Philadelphia, manufacturers of electric and hand power cranes, hoists, &c. Mr. McCoy is also sales agent for the Springfield improved water heater and lime extractor, made to operate with boilers from 50 to 400 hp.

Pittsburgh.

PARK BUILDING, February 5, 1908.—(*By Telegraph.*)

Pig Iron.—Inquiries are more plentiful and sales, while small, are more numerous but at low prices. Foundry Iron seems to be somewhat demoralized, as three or four furnace interests, as stated in mail advices, are competing sharply for such business as is coming up. We note a sale of 500 tons of Northern No. 2 Foundry at $16, 200 tons at $15.75, 100 tons at $16.25 and 300 tons at $15.60, all at Valley furnace. The Iron sold at about $16 has a high reputation in the trade, and consumers are willing to pay 25 to 50 cents a ton more for it, rather than change to another make. We quote the market on Northern No. 2 Foundry at $16 to $16.50, Valley furnace. The official price of $18 at Valley furnace on Bessemer Iron is also being shaded, one or two makers naming as low as $17 at furnace, and we note a sale of 100 tons at that price. We also note a sale of 125 tons of Bessemer with a low sulphur requirement at $18.25, Valley furnace. The official price of Basic Iron is $17 at Valley furnace, but it is being quoted as low as $16. There is very little doing in Northern Gray Forge, and it is being offered as low as $15.25, Valley furnace, or $16.15, Pittsburgh. Southern Forge Iron can be laid down at $15.90, Pittsburgh, so that Northern Forge has to be very close to this price to get any business. The Republic Iron & Steel Company has started its No. 2 furnace at Haselton, and now has two stacks in blast, while Mary Furnace of the Ohio Iron & Steel Company at Lowellville will blow out in a week or 10 days.

Steel.—Producers of Billets and Sheet and Tin Bars report that inquiries are better, and more Steel is being actually sold and specified for than at any time since last October. Prices are unchanged, and we continue to quote Bessemer and Open Hearth Billets at $28, Sheet and Tin Bars at $29 and Forging Billets at $30, Pittsburgh.

(*By Mail.*)

Efforts to maintain uniform prices on Pig Iron are not meeting with much success, there being four or five furnace interests that are not acting in harmony with the others, and are offering their product at considerably less than the fixed prices. These outside furnace interests are offering Bessemer Iron at $17.50, Basic at $16, No. 2 Foundry at the same price and Forge Iron very close to $15, Valley furnace. So little Pig Iron is being sold that these furnaces are able to take nearly all the business offering. The fact that prices on Ore and Steel were reaffirmed last week in New York has not had much local effect as yet, as the demand for practically everything is of a hand to mouth character, and consumers do not seem to be in the mood to place large contracts. There is nothing doing in Rails, but some business is on the tapis and will be given out in a week or two. The demand for Finished Iron and Steel is small, being mostly for actual needs. Some low prices are being made on Coke and a good deal of tonnage has been sold. Scrap is showing betterment in demand and prices are higher, especially on Heavy Steel Scrap, for which dealers are paying $13.75, Pittsburgh, and it has been sold at $14 to $14.25 to consumers. Business in Wire products is moderately active, and the same is true of Tin Plates.

Ferromanganese.—One large importer is offering 80 per cent. foreign Ferro for delivery up to June at $47, Baltimore, equal to $48.90, Pittsburgh. On a firm offer, however, this price would likely be shaded, and we quote foreign 80 per cent. at $48.50 to $49, Pittsburgh.

Muck Bar.—The market is bare of sales, and we quote best grades of Muck Bar, made from all Pig Iron, nominally at $28 to $29, Pittsburgh.

Skelp.—The situation is very quiet, and we do not hear of any new orders being placed. We quote: Grooved Steel Skelp, 1.60c.; Sheared Steel Skelp, 1.70c.; Grooved Iron Skelp, 1.80c., and Sheared Iron Skelp, 1.90c., f.o.b. Pittsburgh.

Rods.—The market is very quiet, but prices are firm on the basis of $35 for Bessemer, $36 for Open Hearth and $37 for Chain Rods, f.o.b. Pittsburgh.

Steel Rails.—The Engineers' Committee of the Pittsburgh & Lake Erie Railroad has recommended that no change be made in standards of Rail section for 1908, and this road will probably place its contract for Rails, about 10,000 tons, with the local mill in the near future. The Norfolk & Western, which some time ago tentatively placed a contract for 10,000 tons of Standard Sections with the Carnegie Steel Company, has finally closed, 6000 tons to be shipped in equal quantities, March to June, and 4000 tons in September and October. The Carnegie Steel Company entered orders last week for 1500 tons of Light Rails. Inquiries for Light Rails are fairly active. Several of the mills that reroll Rails have advanced prices $1 a ton, and now quote at $24 minimum. Regular prices on Light Rails, which are still being shaded about $3 a ton by the mills rerolling Rails, are as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and 12-lb., $32. We quote Standard

Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

Structural Material.—More new business is coming up in the Pittsburgh District and in the West than for some little time. Included in this is a Baltimore & Ohio crossing at Cleveland, to be built by the city, calling for about 1400 tons; a new court house at Youngstown, about 500 tons, and some bridge work, about 600 tons, the latter to be placed this week. None of the fabricating concerns has enough work to operate to full capacity, and, as a result, some low prices are being named on the small tonnage that is coming out. The mills are able to make prompt deliveries. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—No large tonnage is being placed, orders being entirely for small lots and actual needs. All the Plate mills are short of work, and some shading in prices is being done, but this is mostly by mills that do not roll wide sizes. We quote: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 in	.05
Plates over 110 to 115 in	.10
Plates over 115 to 120 in	.15
Plates over 120 to 125 in	.25
Plates over 125 to 130 in	.50
Plates over 130 in	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. R. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40

Shell grade of steel is abandoned.

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Sheets.—Only a fair amount of new business is being placed in Sheets, this being the dull season of the year, and no large business is expected until about April, when the building season will open up and the demand for Roofing Sheets will then show betterment. None of the Sheet mill concerns is operating to full capacity, the leading interest running less than 50 per cent. of its mills. However, prices are being well maintained, and we quote: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—Considerable tonnage is being placed in Roofing Plates by the large trade, that desires to have a full assortment of sizes when spring demand opens up. The Can Association is in session in Cincinnati this week, and practically all the leading Can interests and Tin Plate manufacturers are represented. It is not unlikely that a good many contracts for Bright Plate will be placed at this convention, this having been the case in previous years. We are advised that regular prices are being strictly maintained. We quote at $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days this price being subject to the usual rebate of 5c. per base box in large lots.

Bars.—New tonnage in both Iron and Steel Bars continues relatively small, and none of the mills rolling Iron or Steel Bars is able to operate to full capacity. The spread of $4 a ton in prices between Iron and Steel Bars is diverting some tonnage to the former from customers who formerly used Steel Bars. It is not believed, however, that the makers of Steel Bars will reduce prices in the near future at least. The official price on Iron Bars is 1.40c., Pittsburgh, for Western shipment, and 1.55c. for delivery in the Pittsburgh District, but we are advised that both these prices are being shaded. Steel Bars are firm, at 1.60c., Pittsburgh.

Spelter.—There is only a small inquiry. Prime grades of Western Spelter are sold at about 4.50c., St. Louis, but some of the smelters are quoting as high as 4.60c., St. Louis, equal to 4.72½c., Pittsburgh.

Hoops and Bands.—Most large consumers of both Hoops and Bands have placed contracts for their requirements for this year, the mills practically guaranteeing prices against decline. Shipments are heavier than for some time, and we are advised that prices are being firmly held. We quote Steel Hoops at $2, base, full Hoop card extras; Steel Bands, $1.60, base, half Steel card extras, all f.o.b. cars, Pittsburgh, Pa., in carload lots, for delivery during 1908.

Spikes.—No large contracts have been placed by railroads since our last report, but the Southern Railway Company is reported as being in the market for 15,000 kegs. New business is light, and none of the Spike concerns has very much work ahead. We quote Standard sizes of Steel Railroad Spikes at $1.80 to $1.85, but in some cases a lower price has been named in competition with Iron Spikes. The smaller sizes are held at $1.95 to $2 per 100 lb., f.o.b. Pittsburgh.

Merchant Steel.—Very little new business is being placed, and little tonnage on contracts held up some time ago is coming out. The demand for Shafting is extremely dull and prices are being shaded, carloads having sold as low as 55 ano 2½ off, the official prices on Cold Rolled Shafting being 54 per cent. off in large lots and 48 per cent. in carload lots, delivered in base territory. Prices on Merchant Steels are being shaded, but we are advised that inquiries from implement makers are a little better. Nominal quotations are as follows: Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

Merchant Pipe.—A fair amount of new business is being placed, but it is still confined to small lots for actual needs. Not much betterment in the demand for Pipe is expected until April or later, when field operations commence. Prices on Steel Pipe are firm, but on Iron Pipe are still being shaded. The net discount on Steel Pipe to the large trade on ¾ to 6 in. is 74 and 5 per cent. off list, while on Iron Pipe, ¾ to 2 in., 71 and 5 per cent., and over 2 to 6 in., 70 and 5 per cent. are quoted. Discounts on Steel Pipe are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel. Black.	Galv.
	%	%
⅛ to ¼ in.	65	49
⅜ in.	67	53
½ in.	69	57
¾ to 6 in.	73	63
7 to 12 in.	70	55
Extra strong, plain ends:		
⅛ to ⅜ in.	58	46
½ to 4 in.	65	53
4½ to 8 in.	61	49
Double extra strong, plain ends:		
½ to 8 in.	54	43

To the large trade all above discounts are subject to 1 point on the base, and 5 per cent. on the net.

Boiler Tubes.—The demand for both Merchant and Locomotive Tubes is light, and discounts on Merchant Tubes are still being shaded. Prices on Railroad Tubes are fairly strong, but no large tonnage has been in the market for some little time. Discounts on Merchant Tubes for small lots, on which an extra 5 per cent. is allowed in carloads, are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in.	42	47
1¾ to 2¼ in.	42	59
2½ in.	47	61
2¾ to 5 in.	52	65
6 to 13 in.	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Iron and Steel Scrap.—The betterment in the Scrap trade referred to in this report last week still continues, especially in Heavy Steel Scrap, for which there is a fairly active demand, with a rather limited supply. It is stated that some dealers have sold Heavy Steel Scrap short, and are now unable to cover their sales except at a loss. We note sales of 1500 to 2000 tons of Heavy Steel Scrap to dealers at $13.75, Pittsburgh, while sales to consumers have been made at $14 to $14.25, delivered, in the Pittsburgh, Follansbee and Sharon districts. Dealers quote about as follows: Heavy Steel Scrap, for Pittsburgh, Steubenville or Sharon delivery, $14; No. 1 Cast Scrap, $15.25 to $15.50; Low Phosphorus Melting Stock, $17.50 to $18; Bundled Sheet Scrap, $9.50 to $10; No. 1 Busheling Scrap, $14 to $14.50; No. 2, $12 to $12.50; Cast Iron Borings, $8 to $8.50; Steel Axles, $16; Iron Axles, $20.50 to $21; Rerolling Rails, $14 to $14.50; Old Steel Rails, short pieces for Open Hearth use, $14; Standard Sheet Bar Crop Ends, $15 to $15.50, and Grate Bars, $13 to $13.50. All above prices are per gross ton, f.o.b. Pittsburgh:

Coke.—Some low prices have been made on Connellsville and Klondike Coke for spot shipment, sales having been made at $1.70 to $1.75, at oven. On contracts, however, strictly Connellsville Furnace Coke is quoted at $1.90 to $1.95, and

Klondike Coke about $1.85, at oven. Strictly Connellsville 72-hr. Foundry Coke is held at about $2.45, at oven, to consumers, while outside grades are offered as low as $2.25. The Frick Coke Company has started more ovens, and is credited with having had in operation last week 10,943 ovens out of a total of 18,684. It is said that very close to 5000 ovens in the Upper and Lower Connellsville regions have blown in since January 1. The Republic Iron & Steel Company has started 100 ovens at its Republic Works, and intends to start 200 more this week at the same plant. The output of Coke in the Upper and Lower Connellsville regions last week was 208,762 tons, a material increase over the previous week.

Cleveland.

CLEVELAND, OHIO, February 4, 1908.

Iron Ore.—Although last year's Ore prices were reaffirmed at the meeting held in New York last week, the local merchant Ore firms do not regard the matter as definitely settled, and if present plans are followed they will allow the question of prices to remain a open one for the next few weeks. An informal meeting of the shippers was held here last week, previous to the New York meeting. At this meeting the question of prices was discussed, but it is understood that no definite action was taken. While the sentiment of the merchant Ore firms is quite strongly in favor of maintaining last year's prices, they are not disposed to definitely fix prices now, in view of the fact that if prices were established at present they would not expect any buying movement in Ore before April at the earliest. By keeping the matter open for a few weeks they would be in a position to make a slight reduction in prices, should they decide that conditions at that time warranted a reduction. There is no improvement in shipping orders for Ore on the docks, and of the 7,385,000 tons stored there at the close of navigation in December it is estimated that from 6,500,000 to 6,750,000 tons remain untouched. One leading shipper did not ship a pound of Ore in January, and the records of others are not much better. According to estimates of mine operators next season's Ore shipments will not exceed 30,000,000 tons, and some place the amount at 25,000,000 tons. Nominal Ore prices remain as follows at Lake Erie docks, per gross ton: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range Non-Bessemer, $4.25; Mesaba Non-Bessemer, $4; Siliceous Bessemer, $2.75; Siliceous Non-Bessemer, $2.35 to $2.60.

Pig Iron.—The market is utterly lifeless. Following the decision of the furnace interests to maintain the price of No. 2 Northern Foundry Iron on the basis of $17, Valley furnace there has been hardly a sale, except perhaps a few car lots, and there is an entire absence of inquiries. It is not thought, however, that the action of the furnacemen has had the effect of keeping consumers out of the market, for the same condition prevails as regards Southern Iron, there being no sales or inquiries. The most encouraging sign in the local situation is the fact that shipping orders for this month show considerable improvement over January, and stock piles of furnaces out of blast are disappearing quite rapidly. Some furnaces still in blast are able to ship about two-thirds of their output. The jobbing foundry industry is improving very slowly, and owing to the large amount of Iron carried over from last year on old contracts an active buying movement on the part of the small consumers is not expected for some time. Some doubt is expressed as to whether the furnaces will be able to maintain the established price. Several interests did not participate in the agreement, and it is reported that No. 2 Northern Foundry Iron is being offered at $16, Valley furnace, for prompt shipment. While local furnaces are quoting No. 2 Iron at $17.85 for Cleveland delivery, and on the basis of $17, Valley furnace, for outside shipment, one local interest regards the price as too high for local delivery and would prefer to make a quotation of about $17.25, delivered Cleveland, or $17, at local furnace. Only one sale of any size is reported—600 tons of No. 2 Foundry Iron at $16.90, Toledo furnace. There are no inquiries for Basic Iron. For the first quarter and first half we quote, delivered Cleveland:

Bessemer	$18.90
Northern Foundry, No. 1	$17.85 to 18.35
Northern Foundry, No. 2	17.35 to 17.85
Northern Foundry, No. 3	16.85 to 17.35
Southern Foundry, No. 2	17.35 to 17.85
Gray Forge	16.90

Coke.—The market is very quiet, there being no good inquiries and the only sales reported are a few small lots. Prices remain low. We quote the best grades of Connellsville Furnace Coke at $1.95 to $2, at oven. Other grades can be bought at $1.80. These prices are for first half delivery. We quote 72-hr. Foundry Coke at $2.50 to $2.60, at oven.

Finished Iron and Steel.—Some of the mills are getting fair specifications on contracts, the market showing considerable improvement in this respect over a month ago. The volume of new business is light, however. Orders are quite numerous, but they are for very small lots for immediate needs. There is some belief that the action of the General Committee in reaffirming prices at its meeting in New York last week will have a stimulating effect on the market, although not enough time has elapsed yet to make the effect noticeable. The operation of industrial plants at nearer their normal capacity is an encouraging sign, and leads to the belief that the volume of orders will gradually increase in volume. While some consumers are satisfied with the action in maintaining prices, others are of the opinion that conditions warranted some reductions. The two local Bar Iron mills are shut down this week. They are at present getting a sufficient volume of business to keep them running every other week. There is a slight improvement in the demand for Sheets, but an order for between two and three carloads that was placed during the week caused some lively competition. Bar Iron prices are being cut by some of the Western mills, and there are reports that price concessions are being offered on Sheets. There is practically no inquiry for Plates. Specifications are now coming in in good shape from the agricultural implement plants, and those in this territory are running at about full capacity. There is some demand for Forging Billets in small lots, which are being sold on the basis of $30, Pittsburgh. The demand for Light Rails keeps up fairly well, and the price is being shaded to meet the competition of mills rerolling Rails. The city of Cleveland will receive bids February 12 for 1200 tons of Cast Iron Water Pipe and for 100 tons of special and miscellaneous Castings. A local Steel man representing New York interests is getting figures on from 16,000 to 20,000 tons of Structural Material for the approaches for the Manhattan Bridge in New York, for which it is expected the contract will be closed shortly. We quote Iron Bars at 1.50c., Cleveland; Steel Bars, 1.70c., Cleveland, for carload lots, half extras; Beams and Channels, 1.80c., base, Cleveland, and Plates, ¼-in. and heavier, 1.80c., base, Cleveland. We quote Sheets, mill shipments, carload lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. There is no change in warehouse prices. We quote Steel Bars out of stock at 1.90c. to 1.95c., and Iron Bars at 1.80c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.20c.; Box Annealed, No. 28, 2.90c.; Galvanized, No. 28, 4.05c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—The general feeling among dealers is better, but if there is any improvement in the demand it is very slight. About the only demand is from mills outside of this territory. Local Bar mills are taking a small amount of Scrap on old contracts, and are buying a limited quantity in car lots. They are running every other week and still have considerable Scrap on hand. No inquiries are coming from the foundries. Steel Scrap remains firm, and Borings are slightly stronger. Turnings appear to be the weakest grade of Scrap on the list. The railroad lists this week include 1900 tons to be sold by the Lake Shore & Michigan Southern and 1500 tons by the Pennsylvania Lines West. Quotations are still largely nominal. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	$11.50 to $12.00
Old Iron Rails	16.00 to 17.00
Steel Car Axles	17.00 to 18.00
Old Car Wheels	16.00 to 17.00
Relaying Rails, 50 lb. and over	25.50 to 26.00
Relaying Rails, under 50 lb.	28.00 to 29.00
Heavy Melting Steel	12.00 to 12.50
Railroad Malleable	12.00 to 13.00
Agricultural Malleable	11.00 to 12.00
Light Bundled Sheet Scrap	8.00 to 9.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles	$16.00 to $16.50
Cast Borings	5.00 to 5.50
Iron and Steel Turnings and Drillings	7.00 to 8.00
Steel Axle Turnings	7.50 to 8.00
No. 1 Busheling	11.00 to 12.00
No. 1 Railroad Wrought	11.00 to 12.00
No. 1 Cast	12.00 to 13.00
Stove Plate	10.50 to 11.00
Bundled Tin Scrap	9.00

Birmingham.

BIRMINGHAM, ALA., February 3, 1908.

Pig Iron.—The transactions recorded during the week are of such a nature that an opportunity to judge the market properly is not afforded. The former quotation of $13.50 on a No. 2 basis, f.o.b. Birmingham, is generally being firmly adhered to, and no sales are believed to have recently been made at figures under this basis; yet in each case the tonnage has been limited to such an extent that prices received are hardly a criterion of the market. It is to be noted, however, that sales have been fairly well distributed among producers, and in view of the fact that three concerns are practically out of the market for first quarter deliveries, the indications are favorable for a maintenance of prices. The demand from the foundry trade is, no doubt, steadily increasing, as is indicated by the number of inquiries re-

ceived, but purchasers are apparently unwilling to take hold for advanced deliveries, and, as a result, sales have been principally of comparatively small lots for prompt shipment. A Northern concern has recently made inquiry for quotations on about 5000 tons, but no part of it is believed to have been placed. The largest sale made during the week is 2500 tons, for delivery covering the first half. This lot is reported sold on a $13.50 basis, and the aggregate of lots around 500 tons, sold at approximately the same price, is significant. One lot of 500 tons has brought $14, f.o.b. Birmingham, but this was a favorite brand, which usually brings a premium, a small lot of the same brand, running 3 per cent. Silicon, having sold for $15, Birmingham. Gray Forge has sold for $11.25, but it is not believed that a greater differential than 50c. per ton on a No. 2 basis could be done on any other grade. Shipments have been made promptly, and furnace yards are being reduced of their stock in apparently a satisfactory manner, but there are no indications of an immediate increase in production.

Cast Iron Pipe.—It is learned that the tonnage for St. Paul and Minneapolis, Minn., will be furnished by Southern interests. The price at which these contracts were awarded is not made public, but it is understood that exceptionally low figures were reached. The city of Indianapolis, Ind., will open bids on something like 4000 tons of Water Pipe, February 5, and lettings of some consequence for Eastern points are expected in the near future. Orders for small lots are placed frequently, and in view of the recent lettings for Minnesota points, no doubt practically all local capacity will be put in operation. It is to be noted that an adjustment of wages has recently been effected, and the cost of production materially reduced. Nominal quotations on Water Pipe are as follows, per net ton, f.o.b. cars here: 4 to 6 in., $28; 8 to 12 in., $26; over 12 in., average, $25, with $1 per ton extra for Gas Pipe.

Old Material.—Some carload lots of Steel and Wrought, as well as Cast Scrap, have been sold during the week, but the demand for all grades is very light indeed. A number of inquiries are reported, but purchasers are apparently uninterested, except in bargain lots, and each sale has apparently been a market within itself. Nominal quotations only are warranted and we quote as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$21.00 to $21.50
Old Iron Axles	17.50 to 18.00
Old Steel Axles	16.00 to 16.50
Old Car Wheels	20.50 to 21.00
No. 1 Railroad Wrought	16.50 to 17.00
No. 2 Railroad Wrought	12.00 to 12.50
No. 1 Country Wrought	12.50 to 13.00
No. 2 Country Wrought	10.50 to 11.00
Wrought Pipe and Flues	11.50 to 12.00
Railroad Malleable	12.50 to 13.00
No. 1 Steel	13.00 to 13.50
No. 1 Machinery Cast	10.50 to 11.00
Stove Plate and Light Cast	9.50 to 10.00
Cast Borings	6.50 to 7.00

San Francisco.

SAN FRANCISCO, CAL., January 29, 1908.

It is the consensus of opinion in nearly all branches of the Iron and Steel industries represented in this city that conditions have improved since the opening of the year, and that the prospects are good for the future. The conservative attitude of the banks as to loans for building and manufacturing enterprises is about all that prevents another boom in construction and the carrying out of many new enterprises such as cement mills, electric power plants, electric railroads, smelters, paper mills, &c. It is likely, however, that most of the local financial institutions will be very cautious about assisting promoters for several years. Eastern capital will be sought more persistently than ever for the carrying out of new propositions, and in some cases the high rates of interest offered for money for long terms by responsible persons will attract Eastern capital to the Coast. A number of new enterprises in the lines mentioned above will be pushed to completion, the capital having already been secured, while others will languish or be nipped in the bud. A revival of mining and smelting operations in California and Nevada is expected, as it is thought that the violent element in the ranks of labor has been overawed by the general feeling among the intelligent workingmen that it is inadvisable to fight over technicalities at a time when manufacturers and other employers find difficulty in collecting money fast enough to meet pay rolls. Resumption of work at a number of Copper smelters is hoped for. Everything indicates increased prices for oil on the Pacific Coast during the year and the drilling of many new wells.

Structural Materials.—While no large building contracts for Structural Steel have been closed during the past week, there has been an increased demand for small work required by the local concerns which erect Steel for buildings of various classes. As soon as more money can be secured from the banks or Eastern capitalists, more Steel frame buildings will be started, for the architects' offices are now busier than for some time, and there are many inquiries. Many hotels and public buildings are projected in the smaller cities of California and throughout the Coast, some of which will have Steel frames.

Pig Iron.—It cannot be said that local conditions have improved much, as far as the present demand for Pig Iron is concerned, but the new business, present and prospective, at the local foundries and engineering works will exhaust stocks within a month or two. Buyers will probably take advantage of the recent drop in prices East to demand lower prices here, although the charter rates on the vessels which bring Pig Iron from Europe are still comparatively high, and the dealers would not reduce prices if the market was not weak. As small foundries are buying in very small quantities for immediate use and most of the large ones are overstocked, there is not sufficient business to establish quotations. Consequently the prices quoted are only nominal. Several shipments of Pig Iron from Europe, of 200 to 900 tons each, have arrived by sea at this port since January 1. A steamer arrived from China January 21 with 1100 tons of Pig Iron made at Hankow, for which there is a fair demand at prices a little under those of other imported brands. Quotations, ex yard San Francisco, are about as follows:

No. 1 English Foundry	$29.00 to $29.50
No. 1 Scotch Foundry	29.00 to 29.50

Merchant Pipe.—There is only a moderate demand from mill for Merchant Pipe, the jobbers in this market having sufficient stocks for present requirements and not anticipating a rapid improvement in the situation. Discounts on Steel Pipe are about as follows on jobbers' carloads:

	Steel. Black. %	Steel. Galv. %
⅛ and ¼ in.	58.5	42.5
⅜ in.	60.5	46.5
½ in.	62.5	50.5
¾ to 6 in.	66.5	56.5
7 to 12 in.	63.5	48.5
Extra strong, plain ends:		
⅛ to ⅜ in.	51.5	39.5
½ to 4 in.	58.5	46.5
4½ to 8 in.	54.5	42.5
Double extra strong, plain ends:		
½ to 8 in.	47.5	36.5

Cast Iron Pipe.—While there are many small inquiries for Cast Iron Pipe from municipalities and water companies, no large contracts have been closed of late, and until money is more plentiful none may be expected. The United States Cast Iron Pipe & Foundry Company was the successful bidder on a small lot of Pipe for Hanford, Cal., for use in connection with the water system. Prices are as follows, per net ton, f.o.b. Pacific Coast terminal points: 12-in., $26.50 to $27.50; 6-in., $27 to $28; 4-in. $28 to $29.

Scrap Iron and Steel.—The situation in Scrap Iron and Steel is very dull, and dealers are unwilling to furnish quotations while there is so little demand. They are still buying a little Scrap to add to their large accumulations on which the market is weak in sympathy with Pig Iron. The rolling mills have reduced their output and still have some Scrap Steel on hand, and will not be heavy buyers until there is an improvement in the demand for Bars. Some Scrap is yet to be dug out of the ruins in the burned district, but there is no hurry about it under present circumstances.

Sheets.—Notwithstanding the drop of $4 per ton in Galvanized Steets in the East, the local jobbers, having good stocks on hand and little demand, have shown no disposition to buy in any quantity. Pending the resumption of heavy building operations throughout the city, there will probably not be much activity in Sheets. There is still some demand for Riveted Steel Pipe, however. The Schaw-Batcher Company is running its plant at Sacramento night and day on several contracts for Riveted Pipe, 24 to 36 in. in diameter.

Coke.—The market for Foundry Coke has not developed much additional strength, and prices are a little off as compared with the last report. Australian Coke, such as is used by smelters for treating Ores, is still weaker on account of continued importations in the face of large stocks on hand at a number of smelters, some of which are closed down. With the gradual improvement expected in the mining regions of the Pacific Coast and at the local foundries, a better demand will arise. Since January 1 seven vessels have arrived at this port with foreign Coke aggregating 10,930 tons. Of this, 7415 tons came from Australia, 3015 tons from England and 5500 tons from Belgium. The arrivals of Coal from Australia and Europe at this port have been very heavy during the past three months, stimulated by the increased demand owing to the coming of the battleship squadron from the Atlantic Coast, and there is now more Coal in the harbor than there is storage room for. The great increase in the price of fuel oil in California may help the Coal market somewhat.

The Risdon Iron Works has about a year's work ahead, including the construction of two large gold dredges and other mining work. The repairs on the transport Logan will keep a large force of men busy for several months. This company may also get some of the repair work on the battleships, which are to arrive here early in May.

The Jupiter Steel Company, which has the only Steel

foundry on the Pacific Coast at present, has an increasing demand for repair work from the stamp mills and the gold dredges. An open hearth furnace is in constant operation at the plant, a few miles south of the San Francisco city limits.

According to advices from Port Townsend, Wash., a deal for the sale of the old Irondale Furnace to Eastern capitalists was concluded recently by James A. Moore of Seattle. The consideration was $500,000, and the new owners intend to make great improvements. The names of the purchasers have not been made public. Mr. Moore bought the property 15 months ago and rebuilt the furnace, having it ready for operation August 1 last. After successfully running the plant with charcoal as fuel, it was decided to make a test with Washington Coke. While the output was declared satisfactory on Charcoal, the product of the furnace was practically doubled with Coke, and at the conclusion of the test the furnace was producing nearly 60 tons of No. 1 Pig Iron daily. This satisfied the management that Coke was the most profitable fuel, and marked an epoch in the Iron industry on the Coast, as it demonstrated the high grade of Washington Coke for the manufacture of Iron. Tests made of the Coal show that good results are obtained in coking the output of the Fairfax, Wilkeson and Montezuma mines, which are located south of Tacoma on the Northern Pacific Railroad. The furnace closed down January 12, and will remain closed a few weeks while arrangements are being completed for a permanent supply of Coke.

The banquet of the California Metal Trades Association January 25 proved to be one of the most enjoyable affairs ever given by the association. During the evening the following subjects were discussed: "Metal Industries of the Pacific Coast," "The Coming of the Fleet," "Relation of the Metal Trades to the Rebuilding of San Francisco," "Oregon, Washington and the United Metal Trades Association" and "The Industrial Side of Metal Manufacturing in California." George W. Dickey, who was general manager of the Union Iron Works during the building of the battleship Oregon, resigning two years ago, delivered an address which, in the main, defended the designers of our new war vessels.

Cincinnati.

CINCINNATI, OHIO, February 5, 1908.—(*By Telegraph.*)

It has been a week in which anxious expectancy has had possession of all departments of the Iron and Steel trade, with but few actual transactions, although in a general way it can be said that inquiries are of a character suggesting business development. There is a better feeling among sellers of finished products, and a settled conviction that those who control prices are able to maintain the situation, while in the Pig Iron trade there is a growing demand for spot deliveries which tend to assist in keeping the price at a figure which has successfully combated some tempting offers of the past few days. Some delayed building operations are coming out which will interest sellers of Structural Material, and the contemplated starting of the new Steel mills in Newport about April 1 has developed some interest all along the line. There is plenty of inquiry in the machine tool manufacturing districts, but, as yet, little buying save for absolute requirements, inquirers showing a disposition to await possible reductions in prices, which manufacturers are firm in denying and refusing on the strength of maintained prices on most material and costly labor.

Pig Iron.—The principal topic of interest among sellers the first two days of the current week was the Detroit inquiry mentioned last week, in which stove manufacturers asked for a large tonnage extending over the last three quarters. This was to have been settled on Monday, but it is understood late to-day that the negotiation of about 7000 tons has only just been arranged, and with a local Michigan furnace interest and a price which will figure on a parity of $12.50, Birmingham. It is understood the purchase is on an analysis basis, and at a competitive price based on the existing agreement. The proper mixture is obtained by the combination of Northern Foundry with a Southern High Phosphorus Silvery. The Detroit concern was quoted a price of $13, Birmingham, on the first half, with $13.50 on the last half for this tonnage of Southern Iron exclusively, and there was a figure of $12.50, Birmingham, quoted covering the three quarters, it is understood, and refused. Delivery on this purchase is to commence April 1. Another Detroit inquiry for 1500 tons of Southern Iron for early delivery has been withdrawn. While the price of $13.50 for Southern No. 2 is freely quoted, and some furnace representatives are naming that as their rock bottom price, there is some Iron going at $13 and some spot shipments to choice consumers are talked of at $12.50, Birmingham. Two sales of 300 tons each to northern Ohio and southwestern Indiana stove makers, respectively, are reported at $13, Birmingham, for first half delivery. As nearly as one can approximate the price, the range for the first half therefore is $12.50 to $13.50 on Southern Iron and about $16.50 to $17 on Northern No. 2. Although the Pipe makers, who have taken about three-fourths of the Foundry Iron sold since the first of the year, are supposed to have filled their requirements, there are said to be some Eastern manufacturers negotiating for large tonnages. Local sales agents do not feel that the Detroit purchase will have any appreciable effect in fixing the market for the last half, nor do they feel that the furnaces will show any less reluctance to quote on the fag end of the year at this time. There is an inquiry from an Ohio melter for 500 tons of Southern No. 2 analysis Iron for second quarter delivery. It is understood that the Ohio melter whose requirements were for about 5000 tons of Basic has temporarily abandoned his quest, because of the great difference in price between the parties interested. Few furnaces are quoting on low grade Irons, each transaction being considered separately. The quotation of $21, at furnace, is made on 8 per cent. Silicon, but it is said to have been shaded 50c. on tonnages of any size. For immediate delivery and balance of first half we quote, f.o.b. Cincinnati, as follows, the freight rates being from Birmingham $3.25 and from the Hanging Rock District $1.20:

Southern Coke, No. 1	$16.25 to $16.75
Southern Coke, No. 2	15.75 to 16.25
Southern Coke, No. 3	15.25 to 15.75
Southern Coke, No. 4	14.75 to 15.25
Southern Coke, No. 1 Soft	16.25 to 16.75
Southern Coke, No. 2 Soft	15.75 to 16.25
Southern Coke, Gray Forge	14.25 to 14.75
Southern Coke, Mottled	13.75 to 14.25
Ohio Silvery, 8 per cent. Silicon	21.70 to 22.20
Lake Superior Coke, No. 1	17.70 to 18.20
Lake Superior Coke, No. 2	17.20 to 17.70
Lake Superior Coke, No. 3	16.70 to 17.20
Standard Southern Car Wheel	25.25 to 25.75
Lake Superior Car Wheel	23.50 to 24.00

(*By Mail.*)

Coke.—There is a little more interest in spot Foundry Coke. Consumers have allowed stocks to run so low that hurry shipments are frequently noted, and prices are being fairly well maintained. Connellsville Foundry is quotable at $2.35 to $2.75, at oven, although the bulk of the business is going at about $2.50, and where purchasers have not been exacting in their requirements this figure has been shaded to $2.25, it is claimed. For spot shipment Furnace Cokes of the various standard fields are quoted at about the same price, $1.75, at oven.

Finished Iron and Steel.—Jobbers find much satisfaction in the printed reports of the result of the meeting of the general committee and sub-committees in New York City last week. Store prices on both Iron and Steel remain unchanged, and the general opinion of dealers here is that little if anything was gained by the Bar Iron makers in reducing prices. Although buying from hand to mouth has been the practice for several months, and in most quarters is still of that character, an occasional stimulus is felt in the action of some optimistic consumer whose faith is backed up with orders. One dealer here to-day sold his first carload for four months (Iron Bars)to an old customer, whose orders were uniformly in carload lots, but who has been buying in the meantime as it was needed from day to day. Dealers quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.55c., with half extras; small lots from store, 1.90c., base, one-half extras; Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.90c., base, half extras. Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c. Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c. Plates, ¼ in. and heavier, carload lots, 1.85c.; small lots from store, 2.10c. Blue Annealed Sheets (heavy), No. 16, carload lots, 2.15c.; small lots from store, 2.50c. No. 14, carload lots, 2.05c.; small lots from store, 2.40c. No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.25c. No. 12, carload lots, 2c.; small lots from store, 2.35c. Sheets (light), Black No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c. Steel Tire, 4-in. or heavier, carload lots, 1.95c., base. Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.25c.

Old Material.—Scrap dealers with undiminished faith in the future continue to buy and unload in their yards. There has been a little buying from rolling mills, and last week saw a very fair shipment of Relayers to Southwestern and Western points. One sale of 400 tons of Railroad Wrought, No. 1, for consumption in a mill in this district brought about $13 gross ton, delivered. There is some interest in Heavy Melting Steel at about $12 gross ton. One local dealer has an immense stock of Metal Scrap which he believes is a valuable asset at present prices. The following prices are given as about representative of this market to-day, and are f.o.b. Cincinnati:

No. 1 Railroad Wrought, net ton	$11.00 to $12.00
Cast Borings, net ton	4.00 to 5.00
Steel Turnings, net ton	5.00 to 6.00
No. 1 Cast Scrap, net ton	12.00 to 13.00
Burnt Cast and Wrought, net ton	7.00 to 8.00
Old Iron Axles, net ton	14.50 to 15.50
Old Iron Rails, gross ton	14.50 to 15.50
Old Steel Rails, long, gross ton	11.50 to 12.50
Relaying Rails, 56 lb. and up, gross ton	22.00 to 23.00
Old Car Wheels, gross ton	16.00 to 17.00
Low Phosphorus Scrap, gross ton	13.50 to 14.50

Philadelphia.

PHILADELPHIA, PA., February 4, 1908.

Buying in almost every direction is still being confined to moderate tonnages for prompt shipment. Consumers show no disposition to purchase for forward delivery. The result of the New York meetings of the various Iron and Steel committees last week in determining to maintain prices has, it is believed, strengthened the position of producers considerably. The outside interests are hardly as strong as they were, and the feeling prevails that they will have no effect on the market, even by offerings under the established prices. In the foundry and machine tool trades new orders are scarce and plants are all being operated on a restricted basis. In the majority of cases 50 per cent. represents the average amount of business being done, but production in some instances is as low as 30 to 35 per cent. In some directions, however, slight improvements have been noted during the past week or two, and plants which have been operated at the lower rate were able to increase their output up to 50 per cent. of their capacity. Notwithstanding the inactive condition of immediate business, the trade feels hopeful regarding the future, and while no exceedingly large buying is anticipated, it is believed that a moderate amount of week to week buying will continue to be done.

Pig Iron.—Generally speaking, the market for Pig Iron is dull. Sales are almost entirely confined to small lots, which in the aggregate, however, amount to a pretty fair tonnage. Buying was held up to some extent pending the outcome of the meetings of the Iron and Steel committees. But now that prices of Ore and Pig Iron have been reaffirmed, the trade expects that a somewhat better buying movement will again set in. Consumers, however, are not likely to buy very extensively under the existing conditions of general business, and it is more than probable that the present method of buying small quantities from week to week will prevail, particularly inasmuch as orders for finished products come out rather irregularly. The position of the Pig Iron producers is, if anything, somewhat stronger. Production is being held down somewhere near the level of consumption. The leading interests are firmly maintaining established prices, although one or two outside interests are still offering Iron under the ruling quotations. Sales by such producers have usually not been very large, although in one case a sale of 1000 tons of No. 2 X Foundry, for delivery during the first half, was reported at from 50 to 75c. a ton under ruling prices. Buying is still largely confined to Foundry grades. The Pipe interests have bought further moderate tonnages, both of Northern and Southern Irons, and are still in the market for some fair sized lots. Outside of these interests the sales of Southern Iron have been comparatively small and have been held pretty close to $13.50, Birmingham, for No. 2. The buying of Virginia Irons has quieted down and few sales are reported. The greater proportion of sales of Pig Iron recently made has been in quantities ranging from carloads up to a few hundred tons, the delivery in nearly every instance being for the first quarter. Prices in practically all transactions have been on the basis of $18.25 to $18.50 for No. 2 X Foundry, delivered in this territory. Some little business has been done for the second quarter, but nothing to speak of has been sold for delivery beyond that period. Forge Iron has been in a little better demand. Sales, however, are mostly in 100-ton lots, for early delivery, at from $16.50 to $16.75, delivered. Practically nothing new has come out in the way of Steel making Irons. One melter in this territory, however, has ordered shipments of Basic Iron, bought last year, resumed, on which deliveries had been held up for several months. Some light sales of Low Phosphorus Iron have been made for prompt shipment at figures equal to about $25, delivered in this teritrory. A little more inquiry is also to be noted for misfit Low Phosphorus Iron, but no sales are reported. Quotations for early delivery in buyers' yards, eastern Pennsylvania and adjoining territory, range about as follows:

No. 2 X Foundry	$18.25 to $18.50
No. 2 Plain	17.75 to 18.00
No. 3 Foundry	17.25 to 17.50
Gray Forge	16.50 to 16.75
Basic	17.25
Low Phosphorus	24.00 to 25.00

Ferromanganese.—The volume of new business is small, users of large quantities having their needs pretty well covered. Offerings vary in tonnage and price, and quotations range from $47 to $49, Baltimore, for prompt shipment.

Steel.—There has been but little change in the demand. The Alan Wood Iron & Steel Company continues to operate its blooming mill, as reported last week, and has enough orders on hand to keep that department running the present week. New specifications are not coming out very satisfactorily, however, and the volume of strictly new business is extremely small. Prices continue unchanged. Ordinary Rolling Steel for delivery in this territory is quoted at $30.40, whlie Forging Steel ranges from $32.40 to $33.40, according to analysis.

Plates.—A little more uniform demand for Plates is reported, although the individual orders are mostly for moderate tonnages. Mills, however, report gains in their production for January over December, in some cases as much as 25 per cent. being noted. Business placed recently is largely for prompt delivery, buyers showing no disposition as yet to purchase for their future requirements. Prices are being firmly maintained and range as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.85	1.90
Flange or Boiler Steel	1.95	2.05
Commercial Firebox	2.05	2.10
Marine	2.25	2.30
Locomotive Firebox Steel	2.35	2.40

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in	.05
Plates over 110 to 115 in	.10
Plates over 115 to 120 in	.15
Plates over 120 to 125 in	.25
Plates over 125 to 130 in	.50
Plates over 130 in	1.00

Structural Material.—There has been a little more activity shown in the demand for Structural Material, and while the greater proportion of the business taken has been for small tonnages of a miscellaneous character, one sale of 2000 tons has been made for delivery during the second and third quarter. Mills continue fairly well occupied, but are not yet running to anything like their full capacity. Prices continue to be firmly maintained, 1.85c. to 2c. being quoted, according to specification.

Sheets.—Mills continue to get enough new specifications to enable them to run at about half capacity. The demand shows some improvement, although the business being placed is practically all for prompt shipment. Prices remain unchanged, mill shipments being quoted as follows, with a tenth extra added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.70c.; Nos. 25 to 26, 2.80c.; No. 27, 2.90c.; No. 29, 3c.

Old Material.—There is a distinctly better feeling. Buying in some grades has improved, and while the individual sales have not been large as a rule, the aggregate tonnage amounts to considerable. Sales of Heavy Melting Steel have been made to several mills, the aggregate of which will equal nearly 10,000 tons, at prices ranging between $13 and $14, delivered. Rolling mills have bought moderate quantities of Railroad Wrought, Turnings and Borings, and prices on these grades show more firmness. We quote for prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory, about as follows:

No. 1 Steel Scrap and Crops	$13.50 to $14.00
Low Phosphorus	18.00 to 18.50
Old Steel Axles	18.00 to 18.50
Old Iron Axles	23.00 to 24.00
Old Iron Rails	17.50 to 18.00
Old Car Wheels	17.00 to 17.50
Choice No. 1 R. R. Wrought	15.00 to 15.50
Machinery Cast	15.00 to 15.50
Wrought Iron Pipe	11.50 to 12.00
No. 1 Forge Fire Scrap	11.00 to 11.50
No. 2 Light Iron	8.00 to 8.50
Wrought Turnings	9.00 to 9.50
Stove Plate	12.50 to 13.00
Cast Borings	8.00 to 8.50
Grate Bars	12.00 to 12.50

Coke.—No particular improvement is to be noted in the demand. Sales of both Foundry and Furnace grades have been light and prices show practically no change. Foundry Coke is quoted at from $2.50 to $2.75, at oven, while Furnace Coke ranges from $1.90 to $2.25. We quote for delivery in Philadelphia territory the following range of prices:

Connellsville Furnace Coke	$4.05 to $4.40
Foundry Coke	4.65 to 4.90
Mountain Furnace Coke	3.75 to 4.10
Foundry Coke	4.35 to 4.60

At the annual meeting of the Portsmouth Forge, Portsmouth, N. H., January 15, the company was reorganized with the election of J. W. Sederquist, Boston, as president; Wallace Hackett, Portsmouth, vice-president; C. Herbert Morton, Boston, treasurer and manager, and J. R. Prescott, clerk, these officers and William F. McCarthy, Boston, constituting the Board of Directors. Mr. Sederquist is a Boston steel merchant; Mr. Hackett is Mayor of Portsmouth; Mr. Morton was formerly with the steel and iron house of William H. Perry Company, Boston; Mr. Prescott is with the Smith & Anthony Company, Boston, and Mr. McCarthy is manager of the Boston office of the Prentiss Tool & Supply Company. The company is putting in new machinery and its working capital is being increased. The products are engine, marine, crusher and armature shafts, piston rods, connecting rods, bending rolls, locomotive forgings, axles and miscellaneous forgings of wrought iron and steel. The business was formerly located at Nashua, N. H.

New York.

NEW YORK, February 5, 1908.

Pig Iron.—The market has been quiet and steady, the majority of sellers in this district holding quite steadily to established prices. Production is declining, there being no inducement to take the risk of stocking much Iron with receding costs and a moderately high level of values. One of the leading Cast Iron Pipe interests is testing the market for a good tonnage. We quote, at tidewater, $18.75 to $19 for No. 1 Northern Foundry; $17.75 to $18.25 for No. 2 Foundry, $17.25 to $17.50 for No. 2 Plain, and $16.75 to $17 for Gray Forge. Alabama Iron is quoted $17.50 to $18 for No. 1 Foundry and $17 to $17.50 for No. 2 Foundry.

Steel Rails.—An order for 1000 tons has been taken by Pittsburgh for an extension to a coal company's trackage. For the Panama Railroad a 750-ton contract has been booked by an Eastern mill. Business in Angle Bars has been good. So far as the larger reqirements of the railroads for 1908 are concerned, the situation is devoid of any tangible development.

Structural Material.—Rather more local business has been figured on in the past week than in the latter part of January, but estimates sent in seem to do little more than swell the volume of projects hung up, and about which nothing definite can be learned. On about 8000 tons of pier shed construction awarded by the City of New York some months ago specifications are at last coming to the mill. The bids recently called for by the New York Central for the Grand Central terminal do not represent any new tonnage, but mean a revision of bids on the first section of the work, the present expectation being to buy less than the 4000 tons at first figured on, and at the same time to secure lower prices in view of the sharper competition now in evidence. Bridge work is a small factor in current estimates. In the past week the American Bridge Company was awarded a small bridge for the Great Northern, and there is yet some small tonnage to be awarded by the New Haven and the Erie. On the Pacific Coast a number of buildings are pending, including particularly that of the Royal Insurance Company at San Francisco, and some work at Seattle. The Steel for the Pacific Mutual Life Insurance Company, at Los Angeles, goes to a firm in that city, and the fabrication of 400 tons of steel for the Home Telephone Company Building, San Francisco, goes to a contracting firm there. It remains to be seen what effect the decision of the Steel interests to maintain prices will have upon the prices named in the bids of fabricating companies, which in a good many instances lately have been construed as signifying an expectation of a lower basis for Steel. We continue to quote as follows for tidewater deliveries on shipments from mills: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

Bars.—Business in both Iron and Steel Bars has been light. The low prices quoted on Iron Bars not having brought out the business which had been expected, a special meeting of the Eastern Bar Iron Association was held in this city to-day for the purpose of considering trade conditions, and the price was advanced to 1.50c., Pittsburgh, or 1.66c., tidewater. Steel Bars are held at 1.60c., Pittsburgh, or 1.76c., tidewater.

Plates.—The local demand is still confined to small lots, but these have been a little more numerous of late. Prices are unchanged, as follows, at tidewater: Sheared Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—Conditions look much better than two or three weeks ago. More orders are being placed, and in a few instances have called for quite a fair tonnage, so that the buying is gradually coming up to expectations for this season. It is observed that some of the shrewdest buyers are now coming in the market. The local gas company is about to purchase 4000 tons. Competition is exceedingly sharp, and quite low prices are made on orders of sufficient size to be attractive. The feeling obtains that those who are taking advantage of present conditions may probably do better than by waiting until later in the season. Carload lots of 6-in. are to be had at $25 to $25.50 per net ton at tidewater, although some makers ask $2 per ton more.

Old Material.—More business is being done, but orders are not calling for any large quantity. The foundries are buying a little more freely, but efforts are naturally being made to force prices still lower. Those in need of foundry stock are not quick to close negotiations, but shop around considerably. Stove Plate seems completely neglected, the demand running to Heavy Cast and Old Car Wheels. Some of the Steel works are beginning to take in shipments on contracts which had been held up for some time, and this causes dealers to make purchases of Heavy Melting Steel Scrap in considerable quantities to cover the requirements thus called for by their contracts. Rolling mills are buying very little in this market, but the hope is entertained that after the meeting of the Eastern Bar Iron manufacturers in this city to-day more activity may result as a consequence of whatever action is taken. Quotations per gross ton, New York City, are as follows:

Old Girder and T Rails for melting	$8.00 to $9.00
Heavy Melting Steel Scrap	8.00 to 9.00
Old Steel Rails, rerolling lengths	10.00 to 11.00
Relaying Rails	15.00 to 16.00
Old Iron Rails	13.00 to 14.00
Standard Hammered Iron Car Axles	15.50 to 16.50
Old Steel Car Axles	13.00 to 14.00
No. 1 Railroad Wrought	10.50 to 11.50
Iron Track Scrap	9.00 to 10.00
No. 1 Yard Wrought, long	10.00 to 10.50
No. 1 Yard Wrought, short	9.50 to 10.00
Light Iron	4.50 to 5.50
Cast Borings	4.00 to 5.00
Wrought Turnings	5.50 to 6.50
Wrought Pipe	8.00 to 8.50
Old Car Wheels	16.00 to 16.50
No. 1 Heavy Cast, broken up	12.50 to 13.00
Stove Plate	11.00 to 11.50
Grate Bars	8.50 to 9.00
Malleable Cast	12.00 to 12.50

Metal Market.

NEW YORK, February 5, 1908.

Pig Tin.—Business dwindled this week to almost insignificant proportions. The effect of the Banca sale was to put the market on a slightly higher level, but otherwise the interest of the week converged in the wide advance in London February 4. That market went up £4 10s. Three different explanations are given for this advance, one being that the bears were running to cover and so advanced the market. Another was that there was a good legitimate demand in Europe, and the market advanced on its own merits. The third explanation was that a leading London operator, who had purchased largely at the Banca sale, was advancing the market to unload. This last rumor seems to be more generally accepted than any other, and there is a remarkable lack of confidence in the present level of prices. The price changes during the week have been as follows:

	Cents.
January 29	27.80 to 27.90
January 30	27.75 to 27.85
January 31	27.85 to 28.00
February 3	28.05 to 28.20
February 4	28.90 to 29.00
February 5	28.60

The January 31 statistics as compiled by C. Mayer of the New York Metal Exchange were more favorable to holders of metal than had been anticipated, but nevertheless there was so little life in the market that they had little or no effect. Deliveries into consumption were figured as 1500 tons, which was less than the preliminary estimates, and as the arrivals at Atlantic ports were only 1232 tons stocks were drawn upon to the extent of 268 tons, making the stock in the United States just that much smaller than at the end of December, or 826 tons on January 31. The total shipments from the Straits were large, amounting to 5218 tons; the visible supply throughout the world, therefore, increased to 14,986 tons, nearly 3000 tons larger than the end of December and 1500 tons larger than a year ago. Of course, the large Banca sale had considerable effect on these statistics. The London market to-day is irregular, and closes lower at £128 15s. for spot and £129 for futures. Sales in London were unusually large, amounting to 1100 tons. The arrivals so far this month amounted to 360 tons, and there are afloat for American ports 2025 tons.

Copper.—The gradual easing in price which has been noted the last two weeks is more manifest. Resale lots of Lake, which were offered a week ago at 13.75c., have not been purchased and are still hanging over the market. Quotations for Lake must therefore be revised to 13.75c. to 14c. It is probable that concessions under this price could be effected on a firm offer. Outside lots of Electrolytic can be done as low as 13.62½c., and it is probable that this price would be shaded to foreign consumers and possibly domestic. Casting Copper is nominal at 13.37½c. In fact, the entire Copper market is so nearly nominal that it is impossible to make quotations with any degree of accuracy. Foreign buying has not been in evidence for 10 days and domestic business is at a standstill. Producers are adhering to their own quotations, some of them asking as high as 14.25c. for Electrolytic, but of course no business has been effected at that level. Conflicting reports regarding the amount of business and stock of Copper in the Naugatuck Valley only tend to confuse purchasers. The total shipment of Copper from Atlantic ports during January was 33,000 tons. Exports since February 1 have been 1068 tons. Prices in London are practically unchanged from a week ago at £62 for spot and £62 10s. for futures.

Waterbury Average.—The Waterbury average for January was 14c.

Pig Lead.—While it is believed that a good consuming demand will be in evidence with the opening of spring, the market now is very dull but steady. Lead can be had in New York at 3.75c. to 3.80c. The price in St. Louis is un-

changed at 3.65c. There seems to be no demand and no business, but it is impossible to obtain quotations for future delivery.

Spelter.—Resale lots purchased at lower figures are coming on the market, and tend to make conditions irregular. Spelter can be had in New York at 4.70c. to 4.75c., and in St. Louis at 4.55c. to 4.60c. It is believed, however, that stray lots in New York could be had at slight concessions, probably about the same as at Western points.

Antimony.—The market is dull and unchanged. Cookson's is held at 9.50c., Hallett's at 9c. and Hungarian brands 8.50c.

Nickel.—Large lots continue to be held at 45c., and smaller quantities at 55c. to 60c.

Tin Plate.—There appears to be a steady demand for Tin Plate, amounting to more than half the capacity of the mills. Another encouraging feature is the advance this week in Swansea of 1½d. on Welsh Tin Plate, which is now held at 11s. 9d. Domestic prices are unchanged, and for 100-lb. IC. Coke Plates $3.89 is asked, f.o.b. New York, and $3.70, f.o.b. Pittsburgh.

Ferroalloys.—A slightly better inquiry has developed for 50 per cent. Ferrosilicon, although the price is unchanged at $85 at seaboard for imported, and the same at manufacturers' works for domestic. Unchanged prices continue to be quoted of Ferromanganese at $47.50 to $48.50, seaboard, but it is rumored that slightly lower figures have been accepted. This, however, lacks confirmation. The question of higher duties for some of the special and high priced Ferroalloys is again coming to the front.

Old Metals.—Despite lower prices for Ingot Copper there has been no change in the price of Old Metals. There is a fair foreign demand, and this is bolstering up the market to a considerable extent. Stocks in dealers' hands are low. Dealers' selling prices are unchanged from last week as follows:

	Cents.
Copper, Heavy Cut and Crucible	13.00 to 13.25
Copper, Heavy and Wire	12.50 to 13.00
Copper, Heavy and Bottoms	11.50 to 11.75
Brass, Heavy	10.00 to 10.25
Brass, Light	7.75 to 8.00
Heavy Machine Composition	12.00 to 12.50
Clean Brass Turnings	8.25 to 8.75
Composition Turnings	10.00 to 11.00
Lead, Heavy	3.50
Lead, Tea	3.25
Zinc Scrap	3.25

Iron and Industrial Stocks.

NEW YORK, February 5, 1908.

The stock market was quite severely depressed on Saturday and Monday, as a result of the pessimism caused by the special message of the President of the United States. Some recovery took place on Tuesday. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 27⅝ to 28¾, preferred 91⅝ to 93¾; Car & Foundry common 29½ to 30¼, preferred 88¾ to 89; Locomotive common 36½ to 38, preferred 90½ to 91; Cambria Steel 27 to 28¼, ex-dividend; Colorado Fuel 18½ to 20; Crucible Steel common 5¼ to 5⅝, preferred 36¾ to 37¾; Pressed Steel common 20 to 21, preferred 75¾ to 78; Railway Spring common 25 to 25½; Republic common 16½ to 17, preferred 68 to 68½; Sloss-Sheffield common 39½ to 40; Cast Iron Pipe common 19¼ to 19½, preferred 66 to 68; Can common 4¾, preferred 49½ to 49¾. It will be observed that the foregoing figures include quotations on Crucible Steel. These had not been available for some time, owing to the closing of the Pittsburgh Stock Exchange, which resumed operations in the past week. Last transactions up to 1.30 p.m. to-day were made at the following prices: United States Steel common 28⅛, preferred 91⅜, bonds 88¼; Car and Foundry common 28¾, preferred 89; Locomotive common 36½, preferred 88½; Colorado Fuel 18½; Pressed Steel common 20¼, preferred 75¾; Railway Spring common 25; Republic common 16½, preferred 68; Sloss-Sheffield common 39½; Cast Iron Pipe common 19½, preferred 66; Can common 5; preferred 49⅞.

The American Can Company reports the following record breaking earnings for the year ended December 31:

		Changes.
Net earnings	$3,246,827	Inc. $712,460
Total deductions	594,435	Inc. 173,489
Net profits	$2,652,392	Inc. $538,971
Dividend	515,416	.....
Surplus	$2,136,976	Inc. $538,971

It is stated that the Nernst Lamp Company, one of the subsidiary interests of the Westinghouse Electric & Mfg. Company, has obtained the signatures of 99 per cent. of the creditors to the readjustment plan permitting the discharge of the receivers. The assets of the company, it is stated, are five times the liabilities.

The Pressed Steel Car Company, Pittsburgh, last week paid out of earnings the seventh annual installment, amounting to $500,000, on its original note issue of $5,000,000. This leaves $1,500,000 to be paid during the next three years.

Dividends.—The American Radiator Company, Chicago, Ill., has declared the regular quarterly dividend of 1 per cent. and an extra dividend of 2 per cent. on the common stock, payable March 31; also the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable February 15.

The Standard Sanitary Mfg. Company, Pittsburgh, has declared and paid quarterly dividends of 1¾ per cent. on the preferred and 1 per cent. on the common stock.

Tests of Full Size Columns of Carbon Stee and Nickel Steel.

Some tests of full size compression members have been recently carried out by J. A. L. Waddell, consulting engineer, Kansas City, Mo., The object of the investigation was to ascertain the value of nickel steel for bridges. The carbon steel columns were built of railroad bridge steel, which complied substantially with the specification, "steel having an ultimate strength between 60,000 and 70,000 per square inch, and an elastic limit of not less than 35,000 lb." The nickel steel was of approximately the following composition:

	Per cent.		Per cent.
Nickel	3.5	Sulphur	0.03
Carbon	0.38	Phosphorus	0.015
Manganese	0.75	Silicon	0.05

It had an ultimate strength between 100,000 and 115,000 lb. per square inch, and an elastic limit of not less than 60,000 lb. The material was rolled by the Carnegie Steel Company, and was made up in the American Bridge Company's shops at Ambridge. The testing work was carried out by G. C. Saunders, under Mr. Waddell's immediate direction, on the 2,160,000-lb. hydraulic testing machine of the Phœnix Iron Company, at Phœnixville, Pa.

All the columns were of the pin ended type. They were composed of two built channels, each consisting of two 3 x 3 x ⅜ in. angles and one 12 x ⅜ in. plate, connected at the ends by batten plates, and laced with 2½ x ⅜ in bars. The lengths between centers of the pins were 10 ft. for the short struts and 30 ft. for the long ones. The results are given in the following tables:

Short Nickel Steel Columns.

Strut No.	Elastic limit. Pounds.	Ultimate stress. Pounds.
1	53,700	68,500
2	....	68,500
3	51,800	69,200
Average	52,800	68,700

Short Carbon Steel Columns.

Strut No.	Elastic limit. Pounds.	Ultimate stress. Pounds.
1	29,600	38,900
2	29,600	39,800
3	27,200	38,900
Average	28,800	39,200

Long Nickel Steel Columns.

Strut No.	Elastic limit. Pounds.	Ultimate stress. Pounds.
1	39,800	44,400
2	32,500	47,200
3	....	42,500
Average	41,200	44,700

Long Carbon Steel Columns.

Strut No.	Elastic limit. Pounds.	Ultimate stress. Pounds.
1	....	29,600
2	22,200	32,400
3	20,400	29,600
Average	21,300	30,500

The tests are a contribution to the need felt by the engineering profession for a thorough set of experiments on full size columns. From a metallurgical standpoint, they admirably illustrate the superiority of nickel steel for structural purposes. G. B. W.

The John A. Roebling's Sons Company, Trenton, N. J., suffered a severe loss by fire on Wednesday. Two large buildings of the Trenton plant were destroyed. One was the wire rope shop and the other the woodworking shop. The company has an entirely new plant, recently completed, which is located a short distance from Trenton.

The Machinery Trade.

NEW YORK, February 5, 1908.

With few exceptions machinery houses in this district report an increased number of inquiries the past week, and as a consequence they feel considerably encouraged over the outlook for the immediate future, believing, as many do, that these inquiries mark the beginning of an improvement in the demand for machinery that will gradually increase. Practically all the inquiries are for small lots, and while they are slow in closing they come from so many sources as to indicate a gradual restoration of confidence, which, it is hoped, will lead to a buying movement on the part of the larger interests. Aside from the increase in inquiries there was no material improvement in business, which was rather light. It is believed that the strict adherance to the retrenchment policy by the railroads and larger corporations and the hesitancy of others to go ahead with construction work already planned are obstacles which will have to be removed before trade shall become normal.

Inquiries in the power equipment line now in the market are larger than they have been in some months, and people in that branch of the trade are considerably encouraged over the outlook. There are some big propositions now before the heavy engine builders, some of which are from Mexico and Canada. The inquiries from this country cover a general line of power equipment for plants of various sizes and for a varied line of industries. Some of them are propositions which have come up before and which have been put off from time to time, but the majority are new inquiries which it is hoped will result in business.

At a meeting of the Textile Supply Dealers' Association held in Washington, D. C., January 29, it was unanimously decided to hold the next meeting May 13, 14 and 15, at the time of the joint meeting of the Southern Supply and Machinery Dealers' Association, the National Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association, to be held at Richmond, Va.

Important Sugar Mill Equipment Order.

One of the largest contracts for sugar mill equipment let in this country for a long time has been awarded to the Fulton Foundry & Machine Company, Atlanta, Ga., by Leon G. Leroy, Havana, for the Jucarao & Moron Sugar & Land Company of Cuba. The Fulton Foundry & Machine Company has been given the order for two large sugar refining plants to be located on the company's property in Cuba, and the entire contract, it is understood, will amount to about $1,000,000. Although the Fulton Foundry & Machine Company will build a large part of the equipment, including a 6-ft. Pratt crusher and a 34-in. Pratt mill, 6 ft. long, as well as three large Corliss engines to operate the first of the two sugar stations, it is understood that the completion of the contract will necessitate considerable machinery purchases, which will probably include boilers, conveying machinery, power plant accessories and the like. Work on the proposed plants, it is understood, will be begun shortly. The placing of this contract at this time is something of a surprise to many who are familiar with the sugar machinery business, as the usual time for purchasing equipment in this line is during March and April. The crop in Cuba this year it not all that might be expected, sugar men say, and consequently the trade in general did not look for any great amount of purchasing. This buying movement, it is thought, will give confidence to other plantation owners and may result in some additional business.

Contracts will be let on or about February 12 by the Curtin-Ruggles Company, 39 Cortlandt street, New York, for the building and equipment for a large cement plant to be built at Wampum, Pa., for the Crescent Portland Cement Company. The plant, which has been designed by the Curtin-Ruggles Company, will be modern in every respect, and the engineers have designed and specified the best in the way of up to date cement making equipment. The power plant inquiries, which are now in the market, will be about 3000 hp., and electrical power will be developed. The Curtin-Ruggles Company will install some of its own special cement machinery, but there is much to be bought in addition to that. The requirements will include three 750-kw. units, boilers to match, conveying machinery, grinders and a general line of all that goes to make a first-class cement making plant. It is stated that work on the construction of the buildings will be begun as soon as the contracts are let.

The Mexican Central Railroad, which maintains an office at 25 Broad street, New York, has been purchasing considerable machinery of late for shop changes and additions being made in the company's system. The company is enlarging its machine shops at Aguascalientes. It is expected that these shops are to be used for most of the repair and construction work of the company's system, and the work of converting a number of the company's engines from coal burners to oil burners is being done there. The company intends to convert nearly all of its engines into the oil burning type, it is understood.

The new erecting shop which the New York Central Railroad is to build at West Albany, N. Y., will be about 70 x 420 ft. and about 60 ft. in hight. The company also plans to erect a large machine shop at that place. It is reported that the railroad has recently secured additional property at Lyons, N. Y., as a site for a new repair shop.

Felix F. Wiener of the International Electric & Engineering Company, New York, has gone to Europe to acquaint himself with the new type of beam shears, unbreakable punches and other specialties which the company intends to introduce in this country this spring.

Considerable business has been placed in this territory of late from the South, a large part of the buying being done by Texan oil interests. Some important inquiries for pumping material have come from that territory, among them being requests for bids on equipment for the Enterprise & Texas Company, Beaumont, Texas, which recently let a contract to L. R. Davis, Houston, Texas, for laying 22 miles of pipe. The company will supervise the installation of its pumping plant, and the inquiries, it is understood, cover that material.

O. R. Whitney, 39-41 Cortlandt street, New York, has inquiries in the trade for a large second-hand outside packed plunger steam pump, 20 to 24 in. cylinder, 9 or 10 in. plunger; a standard gauge steam shovel, ¾ to 1 yard, and a steam driven air compressor capable of delivering 400 ft. of air per minute against a 100-lb. pressure.

The city secretary of Dallas, Texas, will receive bids until Mach 3 for a 10,000,000-gal. high service vertical triple expansion condensing crank and flywheel pump. Specifications are on file in the office of the city secretary, copies of which will be furnished upon application.

But one bid was received January 21 at the State Department of Public Works, Albany, N. Y., for contract No. 9 for barge canal work, which covers that portion of the Erie Canal east of Eagle Harbor. The bid was submitted by the Lake Erie Dredging Company, Buffalo, N. Y., and amounted to $796,269, as against the State Engineer's estimate of $724,014.

The annual report of the State Water Supply Commission submitted to the Legislature is interesting in view of the large horsepower available in New York State, excluding that of the Niagara and St. Lawrence rivers. It is stated that with the proper storage of their flood waters the rivers of New York are capable of furnishing about 1,000,000 hp. for industrial purposes. Particular attention is given to the Sancandaga River as a source of power, and it states that with a dam at Conklinville 50,000 hp. can be produced. It also states that the construction of a storage dam at Portageville, on the Genesee River, would produce 32,000 hp., increasing by 14,000 hp. that now developed at Rochester. Reference is also made to the possibilities of the Racquette River as a source of power.

Contracts will be let on February 19, at the office of the President of the Borough of Brooklyn, Borough Hall, Brooklyn, for considerable road machinery and road making material to be used in that borough. The requirements include one oil sprinkler, three tar melting and gravel heating trucks, three road machines with extra sets of blades, one wheel scraper and two drag scrapers, two steam rollers and six asphalt trucks.

The Salisbury & Spencer Railroad, Salisbury, N. C., is planning to construct a substation for which contracts will be placed within the next two months. Three 1000-kw. transformers have been purchased from the Westinghouse Electric & Mfg. Company, Pittsburgh, and are now being tested. Additional purchases will include pumps, an overhead traveling crane, chain hoist, &c. Communications should be addressed to J. W. Fraser, Southern Power Company, Charlotte, N. C.

Chicago Machinery Market.

CHICAGO, ILL., February 4, 1908.

The encouragement afforded by an appreciable gain in the volume of machinery trade that developed about the middle of the month has hardly been sustained by continued progress in this direction. While no ground has, perhaps, been lost, orders for the past week have certainly not grown more plentiful, nor has there been any general increase in the aggregate of sales. In practically all machinery lines the experience is the same, no one being favored in a marked degree above another. That there are wants to be supplied no one doubts, and the withholding of orders can no longer be charged exclusively to the tightness of money. As a restrictive influence, this feature of the situation has, to a large extent, been eliminated in the West, except perhaps with respect to the financing of large enterprises requiring the sale of securities. It is pretty clear that not a few

buyers are hesitating to come into the market because of a belief that lower prices will prevail in the near future. They are doubtless confirmed in this belief by observing the downward trend of raw material prices. In reply to a customer who, on this account, decided to defer purchase of tools for which he was negotiating, a machine tool dealer pointed out the fact, allowing for the maximum decline of metal in the machines involved, the difference in price would not amount to more than four per cent. of the cost of the machine. In all forms of machinery, therefore, in which labor is the predominating cost factor, it seems unlikely that there will be any considerable reduction of prices as long as the present wage schedules are maintained. This, however, does not alter the fact that there exists a widespread conviction among buyers that there will sooner or later be a marked reduction in values, and in accordance with this belief they are confining their purchases to imperative needs.

Very little new work is being taken by the boiler shops, and what activity there is in this line concerns chiefly the finishing up of existing contracts. Engine builders are finding a moderate demand for small units, but contracts involving engines of large horsepower are by no means plentiful. Rumors are heard of renewed activity in some projects for which considerable machinery in motive power and machine tools will be needed, but there is no authentic evidence of any of the deferred tool lists, heretofore on the market, re-appearing at an early date.

The South Halsted Street Iron Works, 2607-2627 South Halsted street, Chicago, manufacturer of architectural iron work, is preparing plans for the construction of a new steel erecting shop, 125 x 398 ft., the total cost of which will be approximately $65,000. The equipment yet to be purchased for this addition to the plant will include punches, shears and riveting machines. Orders have already been placed for two 15-ton Pawling & Harnischfeger electric traveling cranes.

For the purpose of increasing its shop equipment the Southwestern Iron Company, Guthrie, Okla., has increased its capital stock from $50,000 to $100,000.

The Northwestern Machinery Company, Minot, No. Dak., of which John Elliott, J. E. Murphy and L. Lee are proprietors, is preparing to establish a machine and boiler shop with an automobile garage at that place. A site with suitable trackage facilities has been secured, upon which a shop building, 40 x 80 ft., will be erected. A part of the equipment has already been secured, but the company is now in the market for a few second-hand tools, including one 36-in. radial drill; one 30 x 30 in. by 12-ft. planer, and one lathe 32 in. by 16 ft.

The Washington Iron Works Company, Seattle, Wash., founder, machinist and boiler maker, has been reincorporated under the title of the Washington Iron Works, and its capital stock increased from $100,000 to $500,000. The reorganization, however, involves no change of ownership or management. In order to take care of its increasing business, the company has planned the construction of a boiler shop, 80 x 200 ft., work upon which has already been begun. There will, however, be no additions made to the equipment of the shop until the latter part of the present year.

The City of Ortonville, Minn., is considering the purchase of new equipment for its electric light plant, which would include a 30-kw. alternating generator and engine, and possibly a tubular boiler. No definite decision, however, has yet been reached regarding the purchase of this machinery. The superintendent is J. F. Zwiener.

Extensive changes in the plant of the Citizens' Light & Ice Company, Crochett, Texas, are in contemplation, which include the possible adoption of a three or five wire direct current system. If it is decided to use a five wire system the company will install steam turbines; if the three wire system is chosen the installation of a gas producer plant will be considered. The company is also taking prices on a 25-hp. Corliss engine for direct connection to a No. 10 Wolfe Linde ice compressor. W. H. Brown is manager of the plant.

The water department of Elgin, Ill., has asked for an appropriation to purchase a boiler or boilers of 200 to 250 hp. capacity, also $7000 for pipe extension. Final action upon this request will not be had until March 1. R. R. Parkin is superintendent in charge of this department.

J. A. Pilling, formerly of the Pilling Air Engine Company, Detroit, Mich., has incorporated his business under the name of the J. L. Pilling Company, 319 West Sixty-third street, Chicago, Ill. The company manufactures compressed air and electric appliances. J. L. Pilling is president; David White, vice-president, and M. M. Pilling, secretary and treasurer.

The United Steel Company, Canton, Ohio, has just secured a contract from a Detroit automobile manufacturer for 2000 tons of vanadium steel. It is said to be the largest order for vanadium steel ever placed in the United States.

Cleveland Machinery Market.

CLEVELAND, OHIO, February 4, 1908.

Business with the local machine tool dealers during the past week has shown a little improvement over the previous week. The aggregate sales were slightly larger and inquiries were better. The buying, however, was in small lots, the largest order being for four or five small tools, and most of the sales being of second-hand tools. The orders are all coming from small concerns, mostly machine and repair shops, and are all for small tools, the demand being mostly for drills, lathes, shapers and planers in small sizes. Scarcely an inquiry is coming from large plants engaged in the metal industry. Taking the month as a whole, dealers report that their aggregate sales of machine tools during January were slightly better than those of December.

There is lively competition among dealers to secure what business appears, and some dealers are cutting prices to get the orders when there are inquiries for tools of which they have a good sized stock. This price cutting, however, seems to be only on tools in which dealers are slightly overstocked as the result of cancellations of orders several weeks ago, after the tools were shipped by the builders. Most dealers have succeeded in reducing their stocks during the past month, so that they are not carrying more than a fair stock at the present time.

The supply of second-hand tools in this territory is either rather limited at present or the owners are not making efforts to place them on the market. Owing to the good demand for used tools dealers are quickly picking up those that are offered at good prices, but do not have to keep them in stock many days before finding purchasers.

Machine tool dealers are not of the same mind regarding the outlook for the next few weeks. While some think that there will be a steady but slow improvement, others are of the opinion that when the requirements of the small shops are supplied there will be a dull period for a few weeks, until general conditions improve sufficient to cause large industrial plants to come into the market for new equipment. There were some good inquiries out for machinery and tools for new plants and enlargements before the recent period of depression, but, as yet, nothing further has been heard from the prospective purchasers.

General conditions continue to grow better, and there is more confidence regarding the future. Builders of machinery and manufacturers in various lines report some improvement in both orders and inquiries, and the majority of local industrial plants are gradually increasing their working forces. Builders of motors and other small electrical apparatus report considerable improvement in their orders during the past two or three weeks.

The Burke Machinery Company, Cleveland, Ohio, announces an advance in price of $10 on its Nos. 1 and 2 millers. When the company placed its Nos. 3 and 4 milling machines on the market it charged $20 per machine for the overhanging arm over and above the price of the Nos. 1 and 2 millers, with the intention of ultimately raising the price of the latter machines, which it has now done, the new price going into effect February 1. On the Nos. 2 and 4 millers the prices have been raised $5, as knockouts are now included in the regular equipment of the machines. They will be manufactured, however, without knockouts if desired, and in this case an allowance of $5 will be made for each machine. A reduction in the list price of drill presses has been made, and they will be subject to the regular discount instead of carrying a regular net price. An additional discount of 10 per cent. will be made on these machines when they are taken in dozen lots, either of one kind or assorted. The price of the vertical milling attachment has been raised to $40, and the countershaft for the company's D tapping machine has been raised to $12. The company has just completed a new two-spindle automatic milling machine, similar to its regular two-spindle miller, with the exception that the knee raises, reverses and lowers automatically. It is especially adapted for typewriter factories and similar work. The rotary cutting off saw on which the company has been working for some time is about ready for the market, and it expects to be able to make delivery of this tool about February 15. This saw has a capacity of 3-in. round or 5-in. I-beams or 9-in. flat stock, is equipped with power friction feed, automatic knockouts and has a large clamping table. The company will follow this machine with a larger size, which will cut 5½-in. round x 12-in. long or a 12-in. I-beam.

The Ferro Machine & Foundry Company, Cleveland, has added $150,000 to its capital stock. The increase is to provide more working capital, no additions to the plant being contemplated. The company reports an increase in orders for two-cycle marine engines, and its machine shop is running at full capacity. The foundry end of the plant, from which the greater part of the product goes to automobile builders, is now runnnig at one-half capacity, but much improvement is reported in orders and inquiries to this department.

The Cleveland Die & Mfg. Company has been incorpo-

rated with a capital stock of $10,000 to take over and enlarge the business of the Academy Mfg. Company, a partnership manufacturing specialties at 1276 West Fourth street. The company has effected its organization by the election of the following officers: President, J. C. Theberath; vice-president, E. E. Merkel; secretary, William F. Kees; treasurer, G. J. Brown. The company will make a specialty of screw thread rolling dies. Some new machinery may be added to the plant in a short time.

The Kelley Island Lime & Transportation Company has placed a contract with the Allis-Chalmers Company for the installation of a large rock crushing plant at Clarence, N. Y. The installation will include rock crushing apparatus, motors, transmission machinery, &c. Work on the new plant will be started at once, and it is expected to have the plant in operation early in the spring.

It is expected that the Youngstown Sheet & Tube Company, which has decided to go ahead with its construction work at Youngstown, Ohio, will award the contract early this week for 19 cranes, for which proposals were received some time ago, and probably for considerable other machinery equipment.

During the recent period of depression the plant of the Alliance Machine Company, Alliance, Ohio, has continued to run night and day without a single man being laid off. Although new orders have been scarce during the past three months the company still has enough work on hand to keep its plant in full operation for the next six months.

At the request of President W. A. Clapp of the Board of Public Affairs, Cuyahoga Falls, Ohio, the Council of that village has taken up the question of providing an entire new equipment for its electric light plant to cost about $15,000. It is proposed to install a series of alternating current regulators and transformers, a 300-hp. engine, two 60-cycle, 2200-volt generators, new service transformers, &c.

The Ohio Blower Company, Cleveland, manufacturer of exhaust heads, ventilators, blowers, &c., has increased its capital stock from $25,000 to $50,000, to provide more working capital and as a preliminary to the erection of a new plant. The company has as yet, however, made no definite plans regarding the erection of a plant.

The Imperial Electric Company, Akron, Ohio, has been incorporated with a capital stock of $180,000, to take over the property of the Akron Electrical Company. No additions to the plant are planned. The incorporators are E. E. Andrews, R. E. Inskeep, William Weaver, W. C. Hall and A. C. Linzee.

The Canton Mfg. Company, Canton, Ohio, has elected the old directors and officers for the ensuing year. The officers are: President and treasurer, A. T. Stone; vice-president, C. L. Hunter; secretary, M. F. Taylor; superintendent, L. B. Sharpnack. A dividend of 7 per cent. was declared on the preferred stock. The company has enough orders on hand to keep it busy until early spring.

With an authorized capital stock of $25,000 the Marion Tool & Specialty Company, Marion, Ohio, has been incorporated by E. L. Coddington, F. E. Disbennett, A. M. Peoples, R. S. Atkinson and Walter Bolander.

The Williams Test Clamp Company, Cleveland, has been incorporated with a capital stock of $10,000 by J. H. Williams, F. P. Thomas, E. P. Salberg, F. P. Ayer and W. L. Cary, Jr. The company intends to place on the market a tool for telephone repairs.

Philadelphia Machinery Market.

PHILADELPHIA, PA., February 4, 1908.

The past week has brought out a greater variety of inquiries for machinery and tools than has been experienced for some little time. Prospective buyers appear, to some extent, to be at least willing to consider the question of making purchases, which in itself is considered an encouraging feature, even if purchases are not promptly made. For the last month or so their disposition has been rather to avoid any discussion on the subject of possible purchases of tools, but with the return of more normal conditions in financial matters a number of those who were previously considering the question of placing orders have shown an inclination to get in touch with the market. Inquiries have been pretty well confined to single tools, but here and there fair lots required to carry out certain plans of work are being inquired for. No large lists, however, have made their appearance, and until conditions generally show some indications of betterment not a great deal of improvement in this direction is expected. The sales have been pretty largely confined to dealers, and in nearly every case deliveries can be made from stock, as supplies now on dealers' floors or in their warehouses are, as a rule, quite large. No buying has developed as yet on the part of the railroads, and while it is expected that some scattered buying will come from this source before a great while, nothing of any magnitude is anticipated, in view of the unsatisfactory condition of general business.

Manufacturers report orders coming in as considerably scattered, although here and there some fair business, largely in the nature of special tools, has been booked. Generally speaking, however, the volume of new business is hardly sufficient to keep plants going even at the restricted rate of operation. The greater number of the plants continue operating at about half their capacity; some few are able to run about three-quarters full, while a few are unable to get enough business to enable them to do much over one-third the capacity at which they were working for the greater portion of last year.

Export business in this territory has been light. What has been done has been confined largely to tools of a special character.

Secondhand tools and machinery continue in moderate demand. Some dealers report a fair volume of business, largely in tools of the smaller class, while others have found trade more quiet. Secondhand boilers and engines are not in very active demand. Sales are considerably scattered and appear to be confined to equipment of moderate powers.

While there has been no general change in the foundry situation, there has been a little spotty improvement in some directions. The majority of both the gray iron and steel casting plants are running on greatly reduced tonnages. Buyers still continue to place their orders in a hand to mouth fashion, and show no disposition to anticipate their requirements.

The warden of the New Jersey Hospital for the Insane, Trenton, N. J., has recommended that an electric light plant be installed at a cost of about $20,000. He has also asked for an appropriation of $2500 for the drilling of new wells for an increased water supply.

The American Pulley Company notes a slight increase in the volume of business transacted in January, compared with the previous month. The foreign demand for all wrought steel pulleys shows some increase. Orders are not large, but undoubtedly they have increased in number. Domestic trade does not show any great variation. Orders are being received in fair numbers, but the tendency is toward small quantities.

Ballinger & Perrot, engineers and architects, have awarded to the Philip Haibach Contracting Company of this city, the contract for the erection of an office and manufacturing building at Sepviva and Adams streets. The new building will be 60 x 158 ft., five stories, and of fireproof construction throughout.

Bids have been opened by Acting Director Knight, of the Department of Public Works, Philadelphia, for furnishing four water tube boilers and a chimney for the Torresdale filter plant. The following bids, which were ordered scheduled, were made: For the boilers—West End Heating Company, $35,339; Edgemoor Iron Works, $31,885; Heine Safety Boiler Company, $32,700; Babcock & Wilcox Company, $36,461; D'Olier Engineering Company, $32,886; E. Keeler Company, $35,288. For the chimney—H. R. Heinecke & Co., $3775; Heine Chimney Company $6271; M. W. Kellogg, $6710; Custodis Chimney Company, $7350.

The Standard Pressed Steel Company notes a material increase in foreign orders. Canada is taking quite a number of pressed steel shaft hangers, while orders, covering several hundred hangers each, have been received from Holland, France and Belgium. One order for 350 hangers has been booked from parties in Vienna. Domestic trade is somewhat scattered, although there is more disposition noted to place business, particularly in New England and the Middle West. The plant is fairly well occupied and the outlook for the future is considered more encouraging.

New England Machinery Market.

WORCESTER, MASS., February 4, 1908.

January's sales of the dealers totaled rather more than had been expected. One dealer ventured the statement that if February will show 15 per cent. gain over January there will be little cause for dissatsifaction with the volume of orders, but the month has not started vigorously. What business there is consists of small lots, mostly single tools. Hill, Clarke & Co. report that they have disposed of nearly all of the lot of second-hand tools mentioned last week. All of the 14 Lodge & Shipley lathes have been sold, and nine Milwaukee millers. Of a total of 33 machines only three are left. The machine tool builders report little improvement in business bookings. Inquiries are numerous enough, but few orders are being placed.

President Fred. L. Eberhardt of the National Machine Tool Builders' Association has sent a letter to each member and to each machine tool dealer, asking for an opinion of the business situation as it applies to the machinery trade. The consensus of opinion as gathered from numerous answers received, is that the outlook is distinctly favorable, and that there should be a decided change for the better between now

and March 1. The inquiry was a comprehensive one, embracing the machine tool trade generally throughout the country, and including the branch offices of the machinery dealers and the outcome is one worthy of serious attention.

Manufacturing in New England appears to be picking up in a great many lines. Reports are frequently received of establishments that are starting up again, or increasing working hours or working force or both. Practically all the change that is made is in the direction of increased production.

The Woodward & Powell Planer Company, Worcester, Mass., has elected Edward M. Woodward, Jr., vice-president and director, filling vacancies resulting from the retirement of A. M. Powell. Mr. Woodward is the son of Edward M. Woodward, the president, treasurer and principal owner of the business. John W. Robinson continues as secretary, the three officers constituting the Board of Directors.

The Worcester Fire Extinguisher Company, manufacturer of automatic sprinkler systems, has taken space in the Lombard factory building in this city, and will occupy it for its pipe works. The plant of the Independent Fire Extinguisher Company, which the Worcester company purchased some time ago, will be moved to Worcester. The Arch street factory will remain as it is, only the pipe department being located in the Lombard building.

The receiver of the Berkshire Motor Car Company, Pittsfield, Mass., states that there is excellent prospect of the sale of the company's plant and business on February 15, to which date the sale has been postponed.

Clarence G. Garrigus, New Britain, Conn., and W. L. Barrett, Bristol, Conn., are to establish a new business for the manufacture of special machinery, chain and wire forming machinery, machinery for the cutting and forming of sheet metal, and automatic machinery for all other purposes, including one or two machines upon which Mr. Garrigus is taking out patents, and concerning which he is not ready to make announcement. The plan is to organize a corporation with $50,000 capital stock of which $25,000 will be available in the beginning, the amount being already pledged. The name of the company will probably be the C. G. Garrigus Machine Company, and Mr. Garrigus will be president and general manager of the business, though these details are not definitely decided. A site has been purchased for a new shop, between Riverside avenue and the New York, New Haven & Hartford Railroad, at Bristol. The building will be 40 x 150 ft., and two stories, of brick, heavy mill construction. Temporary quarters have been taken in Mr. Barrett's shop at Bristol, where work will be taken until spring, when the new shop will be available. It will be equipped with the best of machine tools and otherwise have modern facilities for the work. Mr. Garrigus has resigned his position with Landers, Frary & Clark, New Britain, where he has been mechanical superintendent of their factories for six years, in charge of designing, building and buying of all machinery and tools used in the works. For four years previous to that time he operated a machine shop of his own at Waterville, Conn., now conducted by the Rowbottom Machine Company.

The Morgan Construction Company, Worcester, Mass., is in the market for a low-priced swaging machine, the specification including the statement that no other will be considered.

The Vulcan Tool Mfg. Company, Quincy, Mass., announces that it has succeeded to the business formerly conducted by the Alexander Clark Company and the Gifford-Pinel Company, and will manufacture iron and steel tools in great variety. The specialties will be all kinds of tools required in the quarry and stone trade, and tools adapted for the contracting trade, including high grade picks, special sewer tools and tools for structural steel work.

The announcement is made that the Stanley shops of the General Electric Company at Great Barrington, Mass., have been permanently closed, and their products will hereafter be manufactured at other plants of the company.

Cincinnati Machinery Market.

CINCINNATI, OHIO, February 4, 1908.

Hopefulness is at this time the most conspicuous factor in the local machinery situation. Orders are not coming in in anything like normal volume, although there are some sales of single tools, and it is to be noted that there is practically no trouble in making immediate deliveries in any of the standard lines. There is but one of the larger establishments devoted to manufacture of these standard tools shut down absolutely, and it is announced that the annual inventory will be taken during the two weeks' interval. Others are running on an average of 40 hr. a week, with one-third to three-fourths of their usual forces, and in a few rare cases shops have weathered the strain of the last quarter of 1907 and so far in 1908 with no diminution of hours or employees. Reports indicate that the wood working machinery lines have been first to post notices of reduction in wages, and these have not been serious so far, although there is a feeling that a general wage reduction is coming in the not distant future. An encouraging sentiment is voiced by representatives of the larger tool making establishments, who are arranging for the usual representation and display at important summer meetings of car and machinery men in the East.

Several heads of large machine tool manufacturing companies are in the field among their agency representatives at various points in this country, taking note of conditions and getting a line on future possibilities. Word from these gentlemen is anxiously awaited in local manufacturing circles. Their investigations are bound to be of great value in the trade, and their conclusions will have great weight in determining shop personnel and practice for the rest of the year.

The mails of most tool manufacturers, particularly the past two or three weeks, have contained many inquiries and some tentative orders, based on the outlook. That there is a genuine demand based on a real need for machines is apparent, and that a good buying movement is in abeyance, which only needs the stimulus of returning confidence to unfold and develop, is a conviction with nine-tenths of the machine tool manufacturers.

In the line of ice manufacturing machinery, there is considerable activity, and the same can be said of smaller and medium sized units in electric power generating machinery. A local company has just shipped to a mining district in Minnesota a 300-kw. generator for installation in a large camp on the lines of the Northern Pacific, and this was in addition to an order for three shipped during January to the same point. Salesmen are figuring on several nice orders for power equipment for installation in Western mining districts during the spring and summer. Among the dealers there is still a dearth of orders, and only what might be designated as bargains are moving. Inquiries based on future conditions in money and trade centers are plentiful.

Machinery men are interested in the convention which is in session here this week, consisting of representative men of three separate organizations: The National Canners' Association, the Canning Machinery and Supplies' Association, and the National Canned Goods and Dried Fruit Brokers' Association. A splendid exhibit of canning machinery and modern method is made in the machinery section at Music Hall.

George W. McCumming and E. J. Tully are delegates from Cincinnati to the convention in Chicago of the National Builders' Supply Association. They expect to secure the 1909 meeting for Cincinnati.

The Sanitary Can Company, Indianapolis, Ind., has purchased two Curtis turbines of about 150 kw. each for installation in its plant.

For the new building of the Young Men's Christian Association in Indianapolis, Ind., some engines and generators are under specification. E. L. Phillips of 45 Broadway, New York, is the consulting engineer.

There is to be noted a slight improvement in the conditions at the jobbing foundries; the melt is increasing, and some business held up the late months of 1907 is going.

In the line of punch and shear machinery there is a marked increase in inquiry and some business. The Cincinnati Punch & Shear Company is engaged on some special machinery for parties perfecting new types of machinery or patented articles. A small order is for the Interborough Rapid Transit Company, New York; another is an order for boiler shop equipment and comes from the New Bedford Boiler Company, New Bedford, Mass.

In summing up conditions existent in this machine tool manufacturing center, one finds: First, all plants running save one, which is idle for two weeks, during which the annual inventory will be taken; second, an average of 36 to 40 hr. per week time, with forces ranging from one-half to two-thirds normal; third, collections somewhat slow; a few have no complaints to make, but the majority incline to the belief that they might be much better; fourth, no openly announced cut in prices of tools; on the contrary, an expressed determination from leaders to fight such a sentiment or any indication of it from whatever source.

The new plant of the Elmwood Castings Company, Elmwood, Ohio, a suburb of Cincinnati, has been started, the initial heat being reported as very successful. The new company is a corporation with a capital of $100,000, James E. Stacy being president and S. W. Spear vice-president and general manager. It will manufacture iron castings of a general character.

Government Purchases.

WASHINGTON, D. C., February 4, 1908.

The Isthmian Canal Commission will receive bids until February 24, circular No. 421, for a locomotive coaling crane, and other supplies.

The Superintendent of Prisons, Washington, D. C., will receive bids until February 28 for an ice making or re-

frigerating machine with ammonia condenser, for the United States Penitentiary at Atlanta, Ga.

The Isthmian Canal Commission will soon ask bids for four vertical boiler feed pumps, four horizontal boiler feed pumps, two horizontal boiler pumps, one belt driven, angle drive, 12-in. throat, single punching and shearing machine, to punch 1⅛-in. hole in ⅞-in. steel plate, and to shear ⅞-in. steel plate.

The following bids were opened January 27, circular No. 413, for supplies for the Isthmian Canal Commission:

Class 1.—Twelve rock drills and parts—Bidder 3, Boston Woven Hose & Rubber Company, Cambridge, Mass., item 3, $316 and $216; 5, Compressed Air Machinery Company, San Francisco, Cal., $5532; 6, Chicago Pneumatic Tool Company, New York, $5023.60; 16, Ingersoll-Rand Company, New York, $4789.60; 21, Motley, Green & Co., New York, item 3, $196; 23, McKiernan Drill Company, New York, $4046; 25, New York Belting & Packing Company, New York, item 3, $300.80 and $336.80; 26, New York Flexible Metallic Hose & Tubing Company, New York, item 3, $500; 29, Sullivan Machinery Company, Chicago, $4764.88 and $4930; 34, Wood Drill Works, Paterson, N. J., $3475.68 and $3369.68; 37, United & Globe Rubber Mfg. Companies, Trenton, N. J., item 3, $336 and $360.

Class 2.—One upright drill press—Bidder 2, Baird Machinery Company, Pittsburgh, $107 and $391; 5, Compressed Air Machinery Company, San Francisco, Cal., $710; 8, Fox Bros. & Co., New York, $424; 18, Manning, Maxwell & Moore, New York, $82.61; 21, Motley, Green & Co., New York, $515.15; 24, Niles-Bement-Pond Company, New York, $99 and $115; 28, C. I. Patterson Company, New Orleans, La., $565; 32, Vermilye & Power, New York, $405 and $78.

The following bids were opened January 28, for machinery for the navy yards:

Class 1.—One lathe—Bidder 25, Bethlehem Steel Company, South Bethlehem, Pa., $6250; 68, Compressed Air Machinery Company, San Francisco, Cal., $5225; 99, Garvin Machine Company, New York, $5118 and $5103; 133, I. H. Johnson, Jr., Company, Philadelphia, $7096; 184, Niles-Bement-Pond Company, New York, $6700 and $8100.

Class 2.—Two lathes—Bidder 68, Compressed Air Machinery Company, San Francisco, Cal., $2884; 99, Garvin Machine Company, New York, $2890 and $2910; 108, Henshaw-Bulkley Company, San Francisco, Cal., $3020 and $3252; 184, Niles-Bement-Pond Company, New York, $3920, $3590 and $3390; 188, Pacific Tool & Supply Company, San Francisco, Cal., $3760; 297, Harron, Rickard & McCone, San Francisco, Cal., $3350.

Class 3.—One slotter—Bidder 108, Henshaw-Buckley Company, San Francisco, Cal., $3330; 174, Manning, Maxwell & Moore, New York, $3505; 175, Newton Machine Tool Works, Philadelphia, $2490; 184, Niles-Bement-Pond Company, New York, $3095; 227, William Sellers & Co., Philadelphia, $2835.

Class 4.—One boring and drilling machine—Bidder 108, Henshaw-Buckley Company, San Francisco, Cal., $2685 and $3735; 149, Lunkenheimer Company, Cincinnati, Ohio, $3995; 174, Manning, Maxwell & Moore, New York, $3915; 184, Niles-Bement-Pond Company, New York, $3900; 188, Pacific Tool & Supply Company, San Francisco, Cal., $3750; 196, Prentiss Tool & Supply Company, New York, $3395.

Class 171.—Two Pratt & Whitney thread milling machines—Bidder 191, Pratt & Whitney Company, Hartford, Conn., $1976.

Class 181.—One planer—Bidder 184, Niles-Bement-Pond Company, New York, $6000 and $4940; 196, Prentiss Tool & Supply Company, New York, $7095 and $7942; 227, William Sellers & Company, Philadelphia, $6000.

Class 182.—One slotter—Bidder 86, Fairbanks Company, New York, $1222.70; 91, Fox Bros. & Co., New York, $994 and $1079; 174, Manning, Maxwell & Moore, New York, $1085; 175, Newton Machine Tool Works, Philadelphia, $910; 184, Niles-Bement-Pond Company, New York, $938 and $1618; 227, William Sellers & Co., Philadelphia, $1045 and $1445; 288, Excelsior Equipment Company, Pittsburgh, Pa., $2595.

Class 183.—One lathe—Bidder 127, Jones & Lamson Machine Company, Springfield, Vt., $1305; 191, Pratt & Whitney Company, Hartford, Conn., $1534.

Class 184.—Two bolt heading, upsetting and forging machines—Bidder 91, Fox Bros. & Co., New York, $1474; 104, R. W. Geldart, New York, $1448.74; 113, Hartman Company, Philadelphia, $715 and $4016; 174, Manning, Maxwell & Moore, New York, $4500 and $4550; 260, Vandyck-Churchill Company, New York, $4500; 266, Williams, White & Co., Moline, Ill., $4640.

Class 185.—One plate bending rolls—Bidder 25, Bethlehem Steel Company, South Bethlehem, Pa., $1495; 29, Bertsch & Co., Cambridge City, Ind., $920; 70, Cleveland Punch & Shear Works, Cleveland, Ohio, $1110; 76, Drew Machinery Agency, Manchester, N. H., $810; 91, Fox Bros. & Co., New York, $1181; 94, Frevert Machinery Company, New York, $784 and $874; 114, Hilles & Jones Company, Wilmington, Del., $645 and $895; 196, Prentiss Tool & Supply Company, New York, $1218; 227, William Sellers & Co., Philadelphia, $1625; 260, Vandyck-Churchill Company, New York, $845; 267, Wickes Bros., Saginaw, Mich., $722.91.

Class 186.—One single end combined punching and shearing machine—Bidder 25, Bethlehem Steel Works, South Bethlehem, Pa., $2865; 70, Cleveland Punch & Shear Works, Cleveland, Ohio, $2070; 114, Hilles & Jones Company, Wilmington, Del., $2340; 147, Long & Allstater Company, Hamilton, Ohio, $2915; 184, Niles-Bement-Pond Company, New York, $2900; 197, Henry Pels & Co., New York, $3200; 227, William Sellers & Co., Philadelphia, $3790; 247, Toledo Machine & Tool Company, Toledo, Ohio, $3700; 260, Vandyck-Churchill Company, New York, $2745; 266, Williams, White & Co., Moline, Ill., $225; 267, Wickes Bros., Saginaw, Mich., $2397.63.

Class 187.—One horizontal punching machine—Bidder 70, Cleveland Punch & Shear Works, Cleveland, Ohio, $1270; 114, Hilles & Jones Company, Wilmington, Del., $1575; 147, Long & Allstater Company, Hamilton, Ohio, $1294; 184, Niles-Bement-Pond Company, New York, $1650; 227, William Sellers & Co., Philadelphia, $2130; 247, Toledo Machine & Tool Company, Toledo, Ohio, $2400; 260, Vandyck-Churchill Company, New York, $1360; 266, Williams, White & Co., Moline, Ill., $1460; 267, Wickes Bros., Saginaw, Mich., $1636.22.

Class 188.—One hydraulic duplex steam pump—Bidder 19, Buffalo Forge Company, Buffalo, N. Y., $1250; 25, Bethlehem Steel Company, South Bethlehem, Pa., $2155; 30, Brooklyn Forge & Supply Company, Brooklyn, N. Y., $1400; 57, Central Metal & Supply Company, Baltimore, Md., $1500; 77, D'Olier Engineering Company, Philadelphia, $1750; 91, Fox Bros. & Co., New York, $1474; 104, R. W. Geldart, New York, $1448.74; 113, Hartman Company, Philadelphia, $715.44; 166, Motley, Green & Co., New York, $3066 and $1527; 174, Manning, Maxwell & Moore, New York, $1676.92; 274, Warren Steam Pump Company, New York, $1225; 277, Henry R. Worthington, New York, $1468 and $1733; 288, Excelsior Equipment Company, Pittsburgh, $1920.

Under bids opened December 10 for supplies for the navy yards, the Prentiss Tool & Supply Company, New York, has been awarded class 12, one vertical drilling machine, $142.55.

The following awards have been made for supplies for the navy yards, bids for which were opened January 7:

Crane Company, Chicago, class 1, one No. 4 improved pipe threading machine, $799.20.

Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., class 11, one metal cold saw, $857.

Under bids opened January 2 for supplies for the navy yards, the Chicago Pneumatic Tool Company, New York, has been awarded class 11, three pipe bending machines, $300.

The following awards have been made for supplies for the navy yards, bids for which were opened January 14:

W. H. Foster Company, New York, class 71, one universal grinder, $650; class 91, one horizontal spindle milling machine, $3750.

Gleason Works, Rochester, N. Y., class 81, one 36-in. automatic beveled gear planer, $2485.

Williamson Bros. Company, Philadelphia, class 92, one surface condenser, $1075.

Mosher Water Tube Boiler Company, New York, class 93, two water tube boilers, $3900.

E. W. Bliss Company, Brooklyn, N. Y., class 212, five air compressors, $15,000.

The following awards have been made for supplies for the Isthmian Canal Commission, bids for which were opened January 21, circular No. 415B:

General Electric Company, Schenectady, N. Y., class 1, alternating current motors, $649.50; class 2, one direct current motor, $93.55.

Manning, Maxwell & Moore, New York, class 4, one duplex pump, $1564.

The Utica Drop Forge & Tool Company.

With appropriate ceremonies the new plant of the Utica Drop Forge & Tool Company, Utica, N. Y., was formally opened February 1, when addresses were made by Mayor Wheeler, W. Pierrepont White, president; Joseph Acroyd, H. K. Kelleman, vice-president and superintendent, and L. P. Smith, general agent. The company was organized in 1895 for the manufacture of nippers and pliers, and from that time has continued under the direction of W. Pierrepont White as president. As the business expanded additional buildings were built and new machinery installed, until the increase became so great that it necessitated the erection of an entirely new plant of enlarged capacity.

It was decided that manufacturing could be carried on with more facility and better economy in one structure, and consequently a building was erected covering an acre of floor space. The new building is of irregular shape, being 300 ft. long on one side and 272 ft. on the other, and 136 ft. wide. The main part of the building is occupied by the machine shop, 136 x 192 ft., with forge and hardening shop, 69 x 136 ft., adjoining. On the opposite of the machine shop from the forging shop is the inspecting room, 34 x 51 ft.; shipping room, offices, drafting room, &c. In one corner of the machine shop next to the forge shop is a tumbling room, 20 x 25 ft. The plant is equipped with modern machinery electrically driven, and is served by an industrial railroad, with electric engine and cars capable of hauling 50 tons. Light is provided by saw-tooth roof, and modern apparatus for heating and ventilating the building has been installed. Excellent shipping facilities are furnished by the New York Central Railroad and the Erie Canal.

Safety for Life and Labor.—On Tuesday evening, February 11, a meeting will be held at the Cooper Union, New York, under the auspices of the American Museum of Safety Devices, at which Bishop H. C. Potter will preside. Carroll D. Wright, former United States Commissioner of Labor, will speak on "Economic Waste of Accidents;" Rabbi Stephen S. Wise on "The Ethical Aspects," Alfred J. Bolton on "Labor's Interest in the Prevention of Accidents," Rev. Percy S. Grant on "The Sacredness of Human Life," Dr. Josiah Strong, president of the American Institute of Social Service, on "The Perils of Peace and of War," and Dr. W. H. Tolman, director of the Museum of Safety Devices, on "Museums of Safety and Accident Prevention."

HARDWARE

FOLLOWING the example of many great commercial organizations, it will be quite proper for the State Hardware associations to put themselves on record as favoring a revision of the Sherman Anti-Trust law. The law as it stands gives evidence of being a bungling piece of legislation, and the effect of it as interpreted by the courts is to make illegal every agreement between two parties in regard to the prices at which the commodities to which the agreement relates shall be sold or the quantities in which they shall be manufactured. Such agreements, because they are in legal phrase "in restraint of trade," are forbidden. If the manufacturers in any given line should get together and agree to maintain certain prices on their products they would be violators of the law. If a merchant should purchase goods, agreeing not to sell them for less than a stipulated price, this would be in restraint of trade and illegal. If in the same town two merchants should agree upon a price at which they would hold certain staple articles they also would be laying themselves open to the severe penalties which are permitted under the Sherman Anti-Trust law. More than this, the right is claimed by those charged with the responsibility of executing the law, of seizing in transit goods passing from one State to another, if they are tainted by any such agreement in restraint of trade. If the law were enforced in all cases it would without question unsettle commerce and industry and paralyze trade relations, and if the letter of the law were carried out there would be all the evils of absolutely unrestricted competition. Aiming to limit the evils of trade combinations, and there is need that the public be protected against them, the Sherman law and the amendments to it make the practical mistake of recognizing no difference between reasonable and unreasonable agreements. The associations of jobbers and manufacturers in Hardware and other lines have asked for a revision or repeal of the law, and it is quite in order for the representatives of the retail trade to take similar action, especially calling for a modification of the law, which when it ceases to be a dead letter becomes mischievous and disturbing to legitimate business interests.

Circumstances have recently provided a strong argument to discourage the demand on the part of jobbers and others for private brand goods. The argument is not new, but market conditions have lately been such as to give it added force. Cancellations have not, fortunately, been a marked feature of the period of business reaction and slackened demand through which we have been passing, but they, of course, have occurred or at least have been attempted with greater frequency than heretofore, as a result of unforeseen conditions, such as reduced sales; temporary financial stringency, necessity for retrenchment, and the like. Where he is handling a manufacturer's regular goods which have a broad market position it is usually easy for a buyer to cancel a portion or even all of his order if he finds that he has overestimated his requirements. Manufacturers are disposed to accommodate customers in this way, rather than overload them with stock which might ultimately result in a forced sale of the manufacturer's goods at low prices. If, however, goods are ordered to be made on a slight variation in pattern or finish, or even merely to carry the purchaser's private brand, the manufacturer not only loses his incentive to protect the purchaser, but he also is cut off from the opportunity to dispose of the goods elsewhere. Thus it rarely happens that an order for special brand goods can be cancelled or even cut down, and this is often a special hardship in view of the fact that in consenting to furnish such goods a manufacturer is naturally inclined to require that the buyer take the largest possible quantity. Of course, a special brand order can sometimes be modified before work in the factory has begun, but as a rule the buyer does not discover the changed conditions until it is too late. Indeed, it is often surprising to find how quickly such an order has been carried beyond the possibility of cancellation, especially in times like these, when manufacturers are desirous of good sized contracts to keep their plants in operation. This question, which has been in good measure lost sight of during the last two or three years of activity and expansion, is now recurring here and there with peculiar and in some cases rather unpleasant force.

Condition of Trade.

With the entrance on February there is some increase in the volume of business. The jobbers report a good many orders from their traveling salesmen, who are now out in good force, and the orders in some cases are fairly liberal. For the most part they are of moderate size and carefully assorted, with a good proportion of spring goods. Mechanics' Tools and Builders' Hardware are in only moderate request, as in most sections prospects for building in the near future are not especially promising. Manufacturers report that the jobbers are replenishing their stocks quite generally, but the orders indicate a good deal of care in their make up and an evident desire not to purchase more than can readily be paid for or than the trade in the near future will absorb. In the present state of the market there is opportunity for the wholesale houses to emphasize the usefulness of their services in carrying stocks, from which the retail merchants can draw in such quantities, often small quantities, as their business requires. There is certainly in the retail trade more of a disposition now than usual of late to look for prompt shipments from the parties from whom goods are purchased, whether manufacturers or jobbers. This conservative hand to mouth buying is just now apparently more in favor than the more aggressive policy of purchasing liberally and covering wants for some time to come. A somewhat similar condition prevails in the relations of the manufacturer and his jobbing customers, who are expecting him to carry the stock and be in readiness to ship goods on call. For this or other reason the orders which manufacturers are receiving from the jobbers are certainly of considerably less volume than usual. While this method of doing business entails a good deal of trouble and some additional expense it has certain advantages, prominent among which is its safety, so far as the financial side of the matter is concerned.

Chicago.

A decision of interest to Hardware dealers was reached last week by the manufacturers of Wire Cloth, when it was determined to advance the prices announced at the beginning of the season, in November, 5 cents per 100 sq. ft., making the price of Painted Screen Cloth $1.35 per 100 sq. ft. to the retail trade. By this action prices are restored to a level of those effective last year. The

recent reaffirmation of Wire prices doubtless had an influential bearing upon the Wire Cloth situation, and was, perhaps, directly responsible for the adoption of the new price schedule just announced. Except in Wire Nails and Wire Fencing, trade continues sluggish, there being no noticeable increase in the volume of business moving outside of Wire Products. Biting cold weather and heavy snowstorms that have prevailed for the past week throughout the West and Northwest were, at least, not favorable to the acceleration of trade, though ordinarily business is not appreciably effected by such incidental changes. The market, however, is at present extremely sensitive and susceptible to influences that under stronger conditions would pass unnoticed. In spite of the lightness of current demand there is everywhere present a feeling of conservative optimism in the outcome. In the opinion of well informed jobbers, there is good reason to expect a gradual development of activity that will result in a spring trade of fairly satisfactory volume. How far the question of values is effective in retarding the placing of orders is hard to determine. It is noticeable, however, that where prices have been definitely and firmly established for a given period, as in the case of Wire Products, orders are coming in much more freely. This would indicate that in the majority of lines it is not so much a matter of the altitude of prices, as doubt of their maintenance at present levels, that causes hesitancy. During the month of February many of the retail dealers in Middle Western States will be in attendance at the various Hardware association conventions, where they will have an opportunity to confer and exchange views as to the situation, with helpful results.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The average traveling salesman's conversation at present is largely made up of categorical questions about like this: "How has business been with you since the first of the year?" "What do you think of the outlook?" "Our president told me to ask you specially what you thought of trade prospects for this spring" (this last is more than flattering), and more of the same kind, till one might think "Why, I am Sir Oracle," unless he have better sense. Be it said to the credit of the trade he generally has.

Trade since the first of the year has shown but moderate vitality, certainly no snap or vigor. The volume from dealers and smaller buyers in the country has been increasing slowly week by week, but we look for no really heavy business until the railroads get in better shape and come into the market as buyers—the princely buyers that they are when times are flush. Just at present they are effecting the most rigid economies, not to say of the cheese paring variety. We hear stories of this enforced, somewhat irrational economy in all departments, especially that of repairs. In the case of one road which has heretofore kept a fair stocked lumber yard for speedy repairs of its freight cars, not a single stick is now to be seen, and such repairs as are absolutely necessary are made of strips taken from castaway dry goods boxes, and any odds and ends that might be picked up in the yards near the track. Locomotives are left standing in the roundhouse for want of a Head Light, an Oil Cup, or possibly a few Bolts. Still the trains are running every day, and no train runs without a certain amount of wear and tear, and even if the passengers are wearing their old clothes, according to the observation of Mr. Gates, there comes a time when it does not pay to get quite so threadbare as the followers of Coxey's army, for instance, even if it does give one a reputation for solvency.

This reminds the writer of an experience he had in Chicago a good many years ago. When making straight from the train to the Sherman House, he met "Long John" Wentworth in the lobby. Mr. W. proposed breakfast forthwith, and loath to lose such good company I said to him, "Just as soon as I can put on a clean shirt I will be with you." "Do not stop for that," said Mr. Wentworth. "If you put on a clean shirt in this town people will be wanting to borrow money of you. Come on just as you are and you will save yourself a lot of bother." The only difference is that the problem with the railroads now is to know what kind of shirt to put on that people will lend them money. As soon as that comes about we shall have a booming business again.

The most study must be put on the expense account and how to reduce it proportionately to the present income of the road month by month. This same problem is confronting other people in business, manufacturers and jobbers as well. Every one is naturally averse to reducing the wages paid labor. Nothing is so disturbing all along the line, no step so unwillingly taken but we do expect to get the work done by fewer people, the selection being made on the basis of efficiency. It is a time for selection of help, whether in the office, or in the warehouse, or in the shop, and those who retain their jobs may take it as a recognition of their superiority over those who were weeded out. That some were held while others had to leave surely bears an unmistakable witness to ability and worth. The armies of the unemployed might largely be classed in times like these as the armies of the inefficient—namely, those who in contest with their fellow men in the same walks of life in the same vocations could not produce the standard results. Either they were lacking in physical ability or willingness to use what they had, or their movements of brain and muscle were sluggish, and they simply failed to turn out product.

The larger cities are thronged with people who have read the various methods devised by the altruistic for amelioration of their condition. These people come from the country and small towns. As soon as spring farming begins their services will be most grateful to the farmer and from that until their harvest time. We never hear of surplus labor on farms. Meanwhile, we must look after them as best we can. Our Wayfarers' Lodge at the office of our Organized Charities is a very busy, popular place.

So far we have had a most mild and open weather. There has been no interruption in navigation of the Ohio River, only one or two days which might be called cold. A small fire in the wage earners' cooking Stove when the thermometer is in the 40's or 50's will, besides performing its ordinary function, warm the entire family. This is certainly fortunate this season owing to the reduced earnings. Nearly all the factories here are running only on part time, some as few as three days in the week, and the whistle blows for hours short enough to suit the most exacting walking delegate.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We are glad to be able to say that we have had a gradual improvement in business since January 1. January will show an increase of more than 50 per cent. over December, but will not be up to the usual January business. One feature of the situation which has been quite satisfactory is that the falling off of business has not demoralized either the manufacturers or jobbers, and prices seem to be well maintained.

Some of the foundries, mills, factories, &c., which shut down in November on account of the panic, have within the past two weeks resumed operation. This, of course, is a great benefit to the local retail trade.

Since our banks have all resumed cash payments and are loaning money to legitimate enterprises, we hear but little talk of the panic, which has completely subsided; but it has given our people a scare and has reminded them that a little conservatism is well, and for these reasons the spring trade is a little slow in opening up. Collections are about up to the usual standard.

Cleveland.

THE W. BINGHAM COMPANY.—The rising tide of prosperity is indicated by many people of both small and large means taking out their money from its hiding or hoarding place and replacing it in the banks, from which source it is getting into general circulation. Easier times are being experienced all over the country. The business of the savings banks is unusually large and money is plentiful, and prosperity seems assured.

Redistribution of railroad stocks into the hands of small holders will have an excellent effect; perhaps there

will not be so much of an incentive for some of the agitators in our Legislatures to try to have stringent and unnecessary laws passed, thereby curtailing the much needed expansion of railroad systems all over the country. People are finding out that not enough profound thought and common sense have been given to matters of this kind, and it is just possible where so many people are financially interested they will see to it that drastic laws will not be allowed to pass unnoticed when introduced.

Money is plentiful in this section, and many merchants are discounting their bills in advance of the required time, and quite a few who have purchased goods for future shipment are now asking how much extra discount they will be allowed if they pay at once. These signs all point to return of confidence, which, as we all know, is the keystone of all business. Considering the time of year, also the trouble all have experienced in monetary affairs, we have no reason to complain about our present business status. Business is daily improving and the industrial situation is clearing up.

We have sold a number of complete new stocks to parties embarking in the Hardware business at different points in the adjoining States. This goes to show that many parties expect to have a good business in the future and are not afraid to embark in new enterprises under present circumstances and prices.

Quite a number of changes have been announced by some of the leading manufacturers; not reductions for the most part, but simply revisions. No strenuous or radical changes in prices have been nor, do we think, will be made. Manufacturers are rather holding matters level and showing good sense in not reducing prices, which would only tend to demoralize business.

Orders that we are receiving are well assorted, and quite a number of Mechanics' Tools are included, indicating that the artisan is at work or expects to be in the near future.

On the whole the situation is quite hopeful, and the outlook is bright in spite of the adverse times we have passed through, and the Presidential campaign, which is before us, which is not at all alluring to the business man; but the country is in good and splendid hands and we believe that things are working out to our mutual benefit all around.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—January has come and gone. Business was not quite up to last year, but it was better than we expected. We have more salesmen this year than we had last, and are covering a larger territory. Therefore the business we have obtained has cost us more money. Nevertheless we have managed to keep our house force good and busy throughout the month.

The very mild winter up to February 1 has, of course, had a bad effect upon sales of Stoves, Skates, Sleds and other winter goods. On the other hand, the cold weather has not interfered with building and outdoor work. So where we have lost in one direction we have gained in another.

The writer recently attended the meeting of the Texas Hardware Association in Dallas. On the train going down he met a man in the Tie business. This gentleman remarked that timber lands had been held at such high prices and labor had been so high he had almost been driven out of business, but recently on account of the financial flurry and the decline in the price of lumber he had been able to pick up a number of pieces of good Tie timber land at reasonable prices. He was also able to get all the labor he wanted at fair figures. Therefore he had put a large gang of men at work, was getting out Ties and selling them to the railroads at a fair profit.

On the way back from Dallas the conductor on the train showed the writer the blue prints of a very nice 10-room frame house. He remarked as lumber was now cheaper than it had been for several years past and as labor was plentiful and also cheap he had decided to build himself a nice home.

We merely speak of these two instances as indicating that a recession in the very high prices of lumber and also of labor in the South will not be without its good effect upon business.

The Texas convention was quite interesting. The writer had not visited Dallas for a number of years, and was much impressed with the evidence on all sides of solid and substantial improvement. Dallas has her skyscrapers also. It used to be an old joke here in St. Louis that whenever one of the local papers ran out of matter they simply filled in names and dates, and gave a glowing account of a murder in Texas. A wild Western flavor was supposed to hang around a Texan. When he appeared on the stage it was with a slouch hat, Prince Albert coat, pants in boots and a snake tie, not to mention a protuberance in the vicinity of his hip pocket slightly suggestive of a 45 Colt's. If such characters were ever indigenous to the soil of Texas times must have changed.

Texas has "gone dry." The writer drank so much Apollinaris at this convention that he felt like the stuttering man who was brought before the police magistrate. The court attempted to talk with the prisoner, but the man sizzled and stuttered so his answers were unintelligible. Finally His Honor asked the policeman what the prisoner was charged with. "Soda water, I guess," was the reply.

While we have attended a good many retail conventions we never visited one where the merchants seemed to be more interested, where they were more courteous, or where they stuck more closely to the business in hand.

Hardwaremen seem to be about the same all over this broad land. With the exception of an occasional Southern savor in the tone of their voices, you would have imagined you were attending a Hardware convention in Indiana or Iowa.

They went on record solid against the proposed parcel post. Telegrams were sent to the President of the United States, to Postmaster-General Meyer, and to all the Senators and Congressmen from Texas, emphatically opposing the present Parcel Post bill before Congress.

The Texas Hardware Association deserves the support of all the Hardware merchants in Texas. It also seems to me it would be wise for them to become affiliated with the National Retail Hardware Association.

We are glad to note that the large producers of Nails and Wire have decided to maintain prices. We are sure this will have a beneficial effect upon trade. We also note advances on Wire Cloth and Poultry Netting. Such action must clearly indicate to the country that the large manufacturers are not very much worried about the present outlook.

Therefore we trust when our friend, the conductor, builds his new house with low priced lumber and low priced labor he will have to buy some high priced Hardware to trim it up.

A very pleasant, well managed banquet was tendered the convention delegates and their guests at the Columbia Club. Several eloquent speakers enlivened the occasion. Col. Bill Sterrett, who is now running for Congress, made some characteristic remarks on the subject of the Hardwareman. He stated he went to a convention and listened to an article on "How to Sell Unsalable Goods." "Now," said the Colonel, "if goods are unsalable how can you sell them, and if you can sell them why are they unsalable?" The Colonel does not understand the "inside workings" of the Hardware trade, and therefore we must excuse him for some of his criticisms of the papers that were read.

Times have been pretty hard in Texas. Collections have been somewhat slow. We suggest to our manufacturing friends they keep their special salesmen, selling one gross lots at an extra five, out of Texas until the merchants can recuperate. In the meantime the jobbers will do their best to take care of the needs of their Texas friends.

Baltimore.

CARLIN & FULTON.—Since our last letter there seems to be some improvement in business, the expected advance which has now occurred in Poultry Netting and Wire Cloth having stimulated buying in those lines, and the actual necessities of the trade requiring filling in orders every day; still, buying is done very conservative-

ly, and will continue so until money circulates more freely.

The extreme dullness in the lumber and mining districts have thrown many out of employment, making trade correspondingly dull in those sections, but it is to be hoped that now the farmers throughout the country will be able to secure labor more easily than has been the case for some time. In fact, it had become a serious question for the agricultural sections as to how to replace labor which had been taken from the fields for work in the mines and saw mills and lumber camps and in railroad construction.

The stability of prices has been remarkable, especially when we consider the decreased demand throughout the entire country. This, of course, is accounted for by the curtailed production, and also by the fact that with but few exceptions manufactured Hardware had never been advanced to any extreme figures. We hope that as the spring approaches the depleted stocks throughout the country will soon need replenishing and that business will spring up in a satisfactory manner even if not to the volume of the last year or two.

New Orleans.

WOODWARD, WIGHT & CO.—There has been a slight improvement in general trade conditions here during the past two weeks. The people have been ordering a little more freely, and ordering a little more than they actually had to have, but only a very little. The country merchants are forcing their customers to pay up and settle whenever they can possibly do so, and are restricting the amount of credit business that they expect to do in the year 1908.

The banks in this section are following the policy of giving legitimate aid to the people in a legitimate business, but insisting that the man who has been spreading out in the last two or three years shall reduce his business by a reasonable amount to make it in harmony with the general reduction that the country will probably see until after the next election.

The Hardware merchants, the manufacturers and the producers of the South are in good shape, and there is going to be no trouble about collecting bills sold to people in this section of the country, except that for the next two or three months they may, in some instances, be 15 to 30 days slower than they have been in times past.

One effect that this little slowing up is going to have is to show the real value of the jobbers as marketers of goods. In a great many lines that the jobbers handle in the South there has been no real profit in the last five years, except through the advance in the value of the stock of goods they had on hand. In other words, a large part of the profits of all of us in these last four or five years have been made through buying the goods when prices were low, and selling them out on an advancing market, and the real difference between what the goods could be bought for at the time of the sale and the price at which they were sold was not enough to pay the cost of the jobber doing business. This was on lines of goods where the manufacturer sold direct to the user, also in carload lots, and without perhaps realizing it the maker cutting the margins for the jobber down so low that in the end, on an even market, the jobbing trade would be eliminated.

The question now is whether the manufacturer who, intentionally or unintentionally, has held the jobbers' margin down so low, wants to distribute the goods in carload lots himself, and to be forced, as on a declining market he will be forced, to practically distribute the goods in less than carload lots, through the jobbers gradually dropping out certain lines in which the margin of profit does not pay the actual cost of handling, and what we are now going to see is what is the real value of the jobbing trade at present. There are certain lines in which the jobber has no business, and which he should not be in, but there are other definite lines, like Bar Iron, Pipe, Light Sheets and various other goods of that character, which large consumers can buy in carload quantities, and in which there is really not a fair margin of profit left to cover the actual handling cost. These goods, unless the competition with the manufacturer is lessened, will ultimately be thrown on the manufacturer to distribute, except what the jobber sells in a very small way in his own immediate neighborhood and in very small quantities.

It is a question that will be really for the manufacturers to decide, and on their decision will rest whether in the times of more or less dull trade that are approaching, they, the manufacturers, carry the majority of the stock and carry the credit risk, or whether the jobbers take this off their hands in return for a fair and decent profit on the lines.

Portland, Oregon.

FAILING, HAINES & MCCALMAN.—When we of this section of the country read of the hard times in the East we are thankful that we are so far away from the center of disturbance. In the Portland District business conditions continue to be remarkably favorable, compared to those in the rest of the country. Our business in Portland is not rushing, and, while the money stringency still affects us to a certain degree, we believe that with the exception of business directly dependent upon lumbering all lines of business are approximately up to the mark set to this time last year. Reports from other houses in our line and in other lines here go to show that business is showing signs of a decided increase in volume shortly. Such falling off of business as we have had in this territory, aside from those affected by the disturbance in lumber, was almost entirely due to merchants who wished to play safe, being frightened by the financial stringency and attendant troubles. These men are now regaining their confidence in the future of this section of the country and are now compelled to reorder largely to fill up their stocks, which they have allowed to run down in anticipation of hard times.

Collections are as yet not all that we could desire. They are in general a little slower than at this time last year. One or two houses, however, have informed us that their collections are even better than at this time last year.

The outlook for future business here is very bright. Locally, the building permits so far this year have in number exceeded those of the same period last year. There are not so many large buildings in contemplation, but there are a great many more small houses, both for rent and for occupation by the owners. Similar reports come from a large portion of the territory tributary to Portland. Of course, it it too early as yet to obtain any reliable information about crops, but conditions look as favorable as they ever do at this season of the year.

From the newspapers we learn that there is a disposition on the part of the Northern Pacific and the Great Northern to make a compromise on the lumber tariff, which is now waiting the decision of the Interstate Commerce Commission. Should a compromise in any way satisfactory to the lumbermen be put into effect there would undoubtedly be a great revival of business in a territory largely tributary to Portland. However, this is all supposition, and nothing will probably be known for some time as to the results of the conference which we are told is now being held on the Sound.

Omaha.

LEE-GLASS-ANDRESSEN HARDWARE COMPANY. — This market, including other jobbing centers located on the Missouri River, presents no new or particularly interesting features since our last report. Business in all lines is steadily improving, and, although the volume of sales for January may not equal that of a year ago, still there is a very fair amount of business doing, considering the general cautiousness influenced somewhat by the recent financial fia co. There seems to be plenty of money throughout this Western country with any amount of productions yet to be marketed, so that conditions may be quoted as very favorable.

We have had an exceedingly mild winter so far, and it appears not unlikely that some rough and ugly weather will develop before the advent of spring. If such should be the case it may exert a depressing effect on business for the time being.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The various changes in the weather during the past 10 days—a heavy snow storm, followed by much colder weather, and from that to raw weather and rain—has no doubt had some effect upon retail sales. Notwithstanding that, however, orders have improved from various sections adjacent to this city. This was no doubt largely owing to the improved financial condition of the banks throughout the country, which have increased over $300,000,000, no doubt largely owing to the fact that cash which had been withdrawn has in many sections been redeposited. Consequently general bank balances at present show remarkably good improvement.

It was recently stated by President Roosevelt, in the Senate and House of Representatives: "There is no nation so absolutely sure of ultimate success as ours of masterful energy, not cast down by fear of failure, but upheld by the confidential hope of ultimate triumph." Some manufacturers (outside of Hardware) state that orders in hand within the last 40 days were held back, but recently have been largely reinstated, and consequently workmen temporarily laid off have now been largely called back. In one instance it is reported that owing to the holding back of orders one manufacturer closed his entire works of 800 employees for a short time, but these works started up on the 3d inst., with 700 employees.

There has been some fear recently on the part of some retail merchants that prices may decline in order to increase their orders, but it has recently been published that at a conference of 75 manufacturers (and purchasers of steel) every manufacturer present expressed the opinion that neither necessity nor reason exists for the reduction of prices at the present time; that prevailing prices are fully justified and should not be changed; that stability is reasonable and desirable. It is a well-known fact that the present Wall Street prices have nothing to do with the selling prices of the various manufactured products. The wages paid by both manufacturers and persons engaged in the trade have no doubt aided in the largely increased trade of the last few years.

Now, where are we? "There is always a safe place in the heart of a storm," and "the pendulum is sure to swing back." The panics of 1857, 1873 and 1893 arose largely from financial conditions. In 1893 the financial condition of our Government largely caused the trouble, which continued for over one year. It was stated by several persons who supplied the Government at that time that the Government was six months behind in payments for goods purchased, and issuing bonds to relieve them was essential, while in October, 1907, the general surplus of the Government was greater than the actual deficit of 1906. Beyond that the large agricultural products of our country, cotton and other supplies, are yet largely to be sold. This, of course, will bring money into various locations almost over the entire country, and it is now considered by bankers and Clearing House associations that the financial difficulties are about over. The daily paper publications have in many instances caused fright and distress to people throughout the country, which has brought about in many instances a slowing down of business, as well as delay in payments.

NOTES ON PRICES.

Wire Nails.—As compared with general conditions ruling in the entire Steel trade, manufacturers regard present conditions as being quite satisfactory. The announcement made by the leading interests, some time since, that prices for the spring trade would be maintained, restored confidence, and a fairly large volume of business has been booked by the mills, and requirements are being anticipated by buyers for some time in advance. A disposition is noticed on the part of buyers to carry larger stocks than they have since last fall. Specifications on old contracts which were held up are gradually being received by the mills, and a moderate volume of new business is being received. Quotations are unchanged, as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

New York.—The notices that the local Nail houses sent to the trade stating that the base price of Wire Nails, in small lots from store, commencing February 1, would be $2.40 per keg, brought in orders for various quantities of Nails previous to that date. Since the first of the month, however, the demand has been comparatively light. The market is apparently in good condition, as sellers seem desirous of maintaining the new price. The local quotation for small lots at store is $2.40 base.

Chicago.—As an indication of the satisfactory progress of trade in Wire products, it is stated that as against the daily sales average of the American Steel & Wire Company for December of 2000 tons, it has grown since the middle of January, when prices were reaffirmed, to nearly 5000 tons, which is not far from normal. Wire Nail shipments are increasing and new business is coming in at a fairly satisfactory rate. Specifications are coming out in sufficient volume to gradually quicken mill activities. Both mills of the leading interest at Joliet are now in operation. Quotations are as follows: $2.23 in car lots to jobbers, and $2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—Present conditions in the Wire Nail trade are referred to by the manufacturers as being quite satisfactory, when compared with general conditions existing in the whole Steel trade. Since the announcement by the leading interests that prices for spring trade would be absolutely maintained, a good volume of business has been placed, and buyers are anticipating their requirements for some time ahead, and are disposed to carry larger stocks than before the announcement was made. Shipments by the mills are heavier than at any time since last October, and there has been a general distribution of Nails throughout the country. Buying from the Southwest is referred to as being particularly heavy, and we are advised that prices, as agreed upon by the manufacturers, are being strictly maintained. Specifications against old contracts that were held up when the slump came are now coming out. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

Cut Nails.—Cut Nail mills are continuing the policy of restricting output as much as possible, to prevent the accumulation of large stocks. Some mills which have not yet started up expect to begin operations in the near future, as they have contract orders which will justify a start. The demand for immediate shipments is light, but shows an improvement over former months. The market is slightly firmer in tone, but irregularity in price is not entirely eliminated from the situation. With occasional exceptions the market is represented in a general way by the quotation of $2.05 on Steel Cut Nails at mill. Iron Nails generally should command about 10 cents more than Steel.

New York.—Previous to the sending of notices to the trade, by the local Nail houses, that, commencing with February 1, the base price would be $2.30, base, for small lots at store, prices had ranged from $2.25 to $2.30, base. The notices brought in some orders, previous to the first of the month at the lowest price. As far as can be learned, the $2.30, base, price per keg has been maintained since the first of the month, for small lots at store.

Chicago.—With building operations sharply checked by cold weather, and car shops running light, there is but little outlet for Cut Nails at present. Business is extremely quiet, being limited to occasional orders of small lots to cover emergency needs. Jobbers report little irregularity in prices, due chiefly to the fact that the character of business offered demands no concession. Chicago quotations are as follows: Iron Cut Nails, carloads, to jobbers, $2.38; to retailers, $2.43; steel, to jobbers, in carloads, $2.28; to retailers, $2.33.

Pittsburgh.—The demand for Cut Nails continues

quiet, but is larger at this time than in any period since last October. The Cut Nail mills are following out the policy of restricting output as much as possible, and this has largely prevented heavy stocks being accumulated, which always act as a menace on the market. Buyers are disposed to cover only for actual needs, and are not placing orders for Nails in any large quantities. Prices are slightly firmer in tone, but are still being shaded by some mills. We quote Steel Cut Nails at $2 to $2.05, f.o.b. Pittsburgh, for carload lots, and small lots at $2.10, to which freight to destination is added. Iron Cut Nails are being held at about $2.15, at mill.

Barb Wire.—Buyers are generally placing orders for spring requirements, since the price has been established for the season. The demand includes specifications which were held up and some new business, so that mill shipments are heavier than for some time. It is understood that prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Chicago.—Since the price has been established for the season buyers have shown no hesitancy in placing orders for requirements covering this period. In consequence a fair amount of new business has been placed, and shipments are now going forward to the Southwest to supply the spring trade, which will soon open in that section. We quote as follows: Jobbers, Chicago, car lots, Painted, $2.38; Galvanized, $2.68; to retailers, car lots, Painted, $2.43; Galvanized, $2.73; retailers, less than car lots, Painted, $2.55; Galvanized, $2.85; Staples, Bright, in car lots, $2.35; Galvanized, $2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—The volume of business being received by the mills, consisting of specifications against old contracts which were held up and also in new orders, is larger than for some time. The large trade is more disposed to take in Barb Wire for stock in order to meet spring demands, and is placing orders more freely than at any time in the last three months. Shipments by the mills are heavier, and we are advised that prices are being strictly maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Plain Wire.—Fence manufacturers are showing their confidence in a prospective fair demand for their output by placing orders for Wire. While orders are not as large as last year there is a disposition to carry heavier stocks than for some time. The belief that there will not be the difficulty in securing prompt shipments on later orders for Wire may have an influence in limiting the size of first contracts. Business is regarded as satisfactory under present conditions, and prices are said to be maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95

Chicago.—Dealers generally anticipate a fair demand for Fencing, and manufacturers are placing orders more conservatively, of course, than in recent years, but with a view of supplying a demand of reasonable proportions. The fact, too, that there is every prospect of being able to secure prompt shipment on supplemental orders has a tendency to limit the volume of initial contracts. Business on the whole is much improved, and is regarded as highly satisfactory under the circumstances. Quotations are as follows: In car lots, to jobbers, $2.08, f.o.b. Chicago, and to retailers, $2.15.

Pittsburgh.—There has been a large increase in volume of business being placed with the mills, this coming from specifications on contracts held up some time ago, and also in new orders, with the result that the mills are entering more tonnage and are making larger shipments than for some time. Makers of Fencing anticipate a fair demand for their product, though probably not as heavy as last year, and are disposed to carry larger stocks of Fence Wire than for some time. We are advised that prices, as reaffirmed by manufacturers early in January, are being strictly maintained. Quotations for base numbers 6 to 9 are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95

Picks and Mattocks.—Leading manufacturers of Picks and Mattocks acting in concert have announced a change in their standard list prices on Picks and heavy Hoes, which they state was made to secure greater uniformity. It will be observed that the new lists are considerably higher than those previously ruling. Discounts remain about the same, the market being represented in a general way by a discount of 70, 10 and 5 per cent. The new lists, which are dated January 23, are as follows:

Railroad or Clay Picks.

	Per doz.		Per doz.
Adze Eye, 4 to 5 lb.	$13.00	Adze Eye, 7 to 8 lb.	$16.00
" " 5 to 6 lb.	14.00	" " 8 to 9 lb.	18.00
" " 6 to 7 lb.	15.00	" " 9 to 10 lb.	20.00

Straight wts.	4 lb.	5 lb.	6 lb.	7 lb.	8 lb.	9 lb.	10 lb.
	$13.00	$13.50	$14.50	$15.50	$17.00	$19.00	$21.00

Hunt Eye same list price as Adze Eye.
Ore Picks and Rock Picks same list price as Railroad Picks.

Contractors' Picks.

All styles of point.

	Per doz.		Per doz.
Weight 7 lb.	$18.50	Weight 9 lb.	$21.50
" 7½ lb.	19.00	" 9½ lb.	22.50
" 8 lb.	19.50	" 10 lb.	23.50
" 8½ lb.	20.50		

Stone and Quarry Picks.

	Per doz.		Per doz.
5 to 6 lb.	$16.50	7 to 8 lb.	$18.50
6 to 7 lb.	17.50	8 to 9 lb.	19.50

Hazel Hoes.

Width of blade, 6 in. ..... per doz., $16.00

Accomac Hoes.

Light weight, width of blade 6 in.	per doz., $16.00
" " width of blade 6½ in.	per doz., 17.00
" " width of blade 7 in.	per doz., 18.00

Grub Hoes.

	Per doz.		Per doz.
Western Pattern:		Baltimore Pattern:	
No. 0, 3 lb.	$12.50	No. 1, 3½ lb.	$13.00
No. 1, 3½ lb.	13.00	No. 2, 4½ lb.	14.00
No. 2, 4 lb.	13.50	No. 3, 5 lb.	15.00
No. 3, 4½ lb.	14.00	No. 4, 5¾ lb.	16.00

Rope.—Buying has been of the hand-to-mouth variety, but manufacturers notice an improved tone to the market and anticipate an increased demand during the month. Collections are reported as improving. Prices remain about the same as for some time and there is not enough business to justify an advance, even if it was considered advisable. High quality Manila Fiber is higher in price than usual, as compared with cheaper grades, and this keeps up the price of the best quality of Manila Rope. The following quotations fairly represent the market for base sizes: Pure Manila, 11½ cents; B quality grades down to 8½ to 9 cents; Pure Sisal, 8 cents; lower grades Sisal, 7 to 7¼ cents; No. 1 Jute, ¼-in. and up, 7½ cents; No. 2 Jute, 7 cents.

Window Glass.—Immediately after the order of the court dissolving the union known as the Amalgamated Window Glass Workers of America, a new organization was formed, to be known as the National Window Glass Workers. The statement was made that business would be conducted as before, except that the new constitution and by-laws would be free from any criticism by court. There has been a slight increase in the production of hand operated factories, and some of the heretofore idle factories are reported as making an effort to resume operations. Owing to the lack of demand it does not seem a favorable time to increase Window Glass production to any considerable extent. Prices recommended at the last meeting of the Eastern Window Glass Jobbers' Association, for Greater New York, are as follows: Single strength, 90 and 25 per cent.; double strength, 90 and 30 per cent. discount from jobbers' list. These prices are, however, not closely adhered to.

Axes.—There are indications that leading manufacturers of Axes will postpone the announcement of quotations for next season's business until an unusually late date. Jobbers' stocks are said to be heavy, as the weather has been unfavorable for the free movement of these goods. The situation has been carefully studied by producers, who have recently held several conferences in an effort to decide on the most intelligent method of marketing their next season's product, and it is believed that more or less harmony of action may be expected. At all events it is quite positively, though not officially stated, that Axes will be no lower, inasmuch as they have have been sold very close to cost for the past two years, and there has been no reduction in that respect.

Poultry Netting.—Manufacturers of Galvanized Poultry Netting have announced their prices for delivery after February 1, which show an advance of 2½ per cent. over the quotations made at the opening of the season.

Wire Cloth.—The expected announcement of the price of Screen Wire Cloth for delivery after February 1 shows an advance on the Painted and Galvanized varieties of 5 cents per 100 sq. ft., making the market to the retail trade $1.35 per 100 sq. ft. Hardware grade Cloth, which it will be remembered was radically reduced in price at the opening of the season, has been advanced 25 cents per 100 sq. ft., and is now quoted to the retail trade as follows:

Nos. 2, 2½ and 3 mesh	$2.75 per 100 sq. ft.
Nos. 4 and 5	3.00 per 100 sq. ft.
No. 6	3.25 per 100 sq. ft.
No. 8	3.75 per 100 sq. ft.

It remains to be seen whether these prices will be maintained by jobbers, who are doubtless stocked with Cloth purchased on a better basis.

Traps.—The Oneida Community, Oneida, N. Y., has announced a change in list prices on the Jump Pattern Traps which it controls. These goods have heretofore been sold on a special list, but from now on will take the regular list for Newhouse and Oneida Pattern Traps. The old No. 2 Single Spring Jump Traps will hereafter be stamped No. 1½ and the old No. 2½ will be stamped No. 2.

Squares.—Sharp competition continues to characterize the market for Steel Squares, which are now being sold by manufacturers at the lowest prices which have been reached in the present movement. The market may be represented in a general way by a discount of 80 per cent., but additional concessions are readily obtainable by close buyers.

Paris Green.—Manufacturers of Paris Green have not announced prices for 1908, and will probably not do so until nearer the time when orders are usually placed. The ingredients entering into the composition of Green are alluded to as being about the same prices as last season, which, it will be recollected, were unusually high. There is no way of determining, at this time, whether any considerable quantity of Paris Green was carried over by wholesale or retail merchants.

Linseed Oil.—The demand continues light for small lots, as the cold weather has interfered with outside work. Some carload orders have been booked for March delivery, but there is little activity in this direction. It is understood that carload orders for out of town Raw Oil have been sold at 41 to 42 cents, according to seller. Prices in five barrel lots are as follows: State and Western Raw, 42 to 43 cents; City Raw, 44 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Spirits Turpentine.—The demand is confined to small lots on a steady market. Quotations are about ½ cent above those of last week. The New York market is represented by the following quotations: Oil Barrels, 45½ to 55 cents; Machine Made Barrels, 55 to 55½ cents.

Newton Wetzel, Hill City, Kan., has sold his Hardware, Stove, Implement, Paint and Sporting Goods business to Rowe & Sperry.

Johnson & Feiring, Galesville, Wis., have sold their general Hardware business to Smithe & Kidder.

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RETAIL HARDWARE CONVENTIONS.

During the next few weeks the following retail Hardware conventions will be held. Where the asterisk appears elaborate plans are being made by the association officials for the accommodation of Hardware exhibits by manufacturers and jobbers.

SOUTH DAKOTA ASSOCIATION,* Aberdeen, February 4-7. Secretary, H. E. Johnson, Redfield.

WISCONSIN ASSOCIATION,* Milwaukee, February 5-7. Secretary, C. A. Peck, Berlin.

CONNECTICUT ASSOCIATION, Meriden, February 10 and 11. Secretary, James de F. Phelps, Windsor Locks.

KENTUCKY ASSOCIATION, Louisville, February 11-13. Secretary, John R. Sower, Frankfort.

NEBRASKA ASSOCIATION,* Lincoln, February 11-14. Secretary, J. Frank Barr, Lincoln.

WEST VIRGINIA ASSOCIATION, Elkins, February 18, 19 and 20. Secretary, Leslie Hawker, Shinnston.

INDIANA ASSOCIATION,* Indianapolis, February 18-21. Secretary, M. L. Corey, Argos.

IOWA ASSOCIATION,* Cedar Rapids, February 18-21. Secretary, A. R. Sale, Mason City.

NEW YORK ASSOCIATION,* Buffalo, February 18-22. Secretary, John B. Foley, Syracuse.

MISSOURI ASSOCIATION, St. Louis, February 24 and 25. Secretary, F. D. Kansteiner, St. Louis.

PENNSYLVANIA ASSOCIATION, Cambridge Springs, March 3, 4 and 5. Secretary, J. E. Digby, McKees Rocks.

OHIO ASSOCIATION,* Columbus, February 25-27. Secretary, Frank A. Bare, Mansfield.

MINNESOTA ASSOCIATION,* St. Paul, February 25-28. Secretary, M. S. Mathews, Guaranty Building, Minneapolis.

ILLINOIS ASSOCIATION,* Peoria, February 26-28. Secretary, L. D. Nish, Elgin.

NEW ENGLAND ASSOCIATION,* Boston, March 11 and 12. Secretary, Charles L. Underhill, Somerville, Mass.

Pennsylvania Hardware Association.

It has been decided to change the place of meeting and the date of the convention of the Pennsylvania Retail Hardware Association. The gathering will take place at Cambridge Springs instead of Altoona, as originally determined, and the dates selected are March 3, 4 and 5. The Hotel Ryder will be the headquarters of the association and the sessions of the convention also will be held there.

Connecticut Hardware Association.

The programme for the fifth annual meeting of the Connecticut Hardware Association has been issued. At the opening session on the afternoon of the 10th inst., addresses will be made by A. H. Abbe, New Britain, member of the Executive Committee of the National Retail Hardware Association; F. Alexander Chandler, Boston, president of the New England Retail Hardware Association, and others. A discussion of topics brought up through the Question Box will also be a feature of this session. In the evening a theater party will be given. On Tuesday forenoon the closing session will be held. At the close of this session a reception to the Governor and other guests will be given in the Winthrop Hotel parlors. Subsequently the annual dinner will be enjoyed, addresses being made by the Governor, the mayor of Meriden and prominent members of the trade. A feature of the dinner will be singing by the Connecticut Hardware Glee Club. The headquarters of the association will be at the Winthrop Hotel and the business sessions will be held at the Colonial Club.

THE C. J. ROOT COMPANY, Bristol, Conn., manufacturer of Wrought Brass Hinges, Counting Machines and Specialties, has held its first annual meeting since its organization to take over the business of the late C. J. Root. The officers elected are as follows: President, Carlyle F. Barnes; treasurer, John T. Chidsey; directors, these officers and M. D. Edgerton, Willis H. Bacon and Frederick N. Manross. The company is making no change in its lines at the present time.

Death of Isaac Nash.

ISAAC NASH, proprietor of Peter Wright & Sons, Dudley, England, died at his residence, The Beeches, Oldswinford, January 16, in his sixty-fourth year. Mr. Nash was exceedingly prominent in many ways, both in public life and in his business capacity. He was the son of Isaac Nash, founder of the Belbroughton mills, producing Scythes and edge cutting Tools, and as a young man went to Australia, where he was engaged in mercantile pursuits. He returned to England about 1880, after which he bought the works known as the Stourbridge forge, and at the death of his father, in 1887, acquired also the Wollaston mills, at the same time succeeding with his brother to the ownership of the Belbroughton mills. Mr. Nash likewise purchased the Spade and Shovel business of Fussels, a Somerset firm of note, and subsequently took over the Spade and Shovel department of Wood, Aston & Co. Later, the business of Peter Wright & Sons, manufacturers of Anvils and Vises, was acquired, for which goods, with the original Waldron Scythes, &c., Wiebusch & Hilger, New York City, are representatives in the United States. Mr. Nash was also, for a time, owner of a Lock making business at Wolverhampton. In dealing with his employees Mr. Nash always displayed great courtesy and patience, and it is said had never been involved in a labor dispute, which is attributed largely to the justice displayed toward his men.

Mr. Nash was active in local government, as County Councillor and Justice of the Peace, and was identified with the Episcopal Church, of which he was a warden. He was actively interested in public instruction and instrumental when chairman of the council, a position he held for five years, in obtaining from Andrew Carnegie some thousands of pounds sterling for a free public library in Stourbridge, Mr. Nash individually purchasing the property on which the free library and technical schools now stand, until the town authorities could take the site off his hands on the same advantageous terms on which it was bought.

Worth Butcher Knives.

THE SUPPLEE HARDWARE COMPANY, Philadelphia, which has had the sole American agency for the Worth Butcher Knives, manufactured by H. Worth & Sons, Sheffield, England, for 20 years, calls particular attention to the fact that these Knives are made in the old-fashioned way by hand hammering, thus incorporating in their manufacture the individual skill of experienced workmen, which is not obtained by the more modern method of stamping out the blades and forging them under a trip hammer. It is stated that the blades have a balance and "hang" to them which is peculiarly their own, and the quality of the steel and temper is emphasized. The handles of the Worth Knives are of rosewood, secured by heavy brass saw screws, making them impervious to the effects of hot water, and at the same time giving them a very handsome appearance. The Butcher Knives, in sizes ranging from 5 to 14 in., as well as Skinning and Sticking Knives, are carried in stock, and as the Supplee Company is now able to obtain a better supply of these goods than heretofore, it is in a position to make satisfactory arrangements with merchants to handle this high grade line of Butcher Knives.

Lalance & Grosjean Mfg. Company's Fire.

THE quarters occupied by the Lalance & Grosjean Mfg. Company, at 19-21 Cliff street, New York, were entirely burned out on the 31st ult. The company had occupied these premises for upward of 30 years, for a considerable period solely for office and salesroom purposes, in the latter respect carrying only lines of samples. All books, papers and records of importance were saved from the fire, and so far as its effect on the company's business is concerned it is simply an inconvenience. A temporary office has been equipped at 56-58 Fulton street, corner of Cliff. The company has arranged for a permanent location, to be occupied about March 1, having taken a floor in the new Barclay building, Broadway and Duane street, which will be fitted up as an office, with sample and sales rooms accompaniment.

TRADE ITEMS.

THE HARTFORD HARDWARE ASSOCIATION, Hartford, Conn., held its annual meeting and banquet at the Hotel Garde, January 30, with a large attendance. Col. William E. Cone was re-elected president, and Capt. George I. Clapp was elected secretary. A. H. Abbe, New Britain, president of the State Business Men's Association, led the list of speakers, who were introduced by President Cone, as toastmaster. The others to respond were J. C. Bidwell, F. S. Bidwell, M. B. Dennison, H. H. Ensworth, A. I. Hoscall, Irving C. Treat, R. C. Witte, F. W. White, H. S. Wooley, W. D. Williams and Secretary Clapp. Several of the gentlemen present have been in the Hardware business for over 35 years and their reminiscences were of unusual interest.

WITH the opening of the year the Ralph Brown Company, San Francisco, Cal., sent out a very interesting booklet entitled "By the Way," and purporting to be "Just a little after-dinner talk to you personally—as one friend to another." The booklet, which was distributed to about 600 of the company's customers, gives a short history of the business. In connection with the closing paragraph of the booklet a memorandum appeared of the total amount of each customer's business with the company for the past year, a blank space being left for what the business might amount to in 1908. We are advised that as a result of figuring up the year's business it is found that notwithstanding the difficult times during the closing three months of the past year the company made a very satisfactory profit on the total business of the year.

PRITCHARD-STRONG COMPANY, Rochester, N. Y., whose Uncle Obediah has become a familiar character in the trade, has created Brother Bill, a jolly looking mechanic, to advertise its line of Metal Ware specialties. With a sample order, a life size lithograhped cut out is furnished, which will hold a real dinner pail in a remarkably natural way. When shown in the window the figure should have the Pail in his hand with a real workingman's lunch—sandwiches, eggs, pie, &c.—in the different compartments of a Prisco Dinner Pail lying in front of him, also a few masons', carpenters' or plumbers' Tools. The company has issued a large illustrated folder stating "Brother Bill's Proposition" on a sample order.

THE BERNARD GLOEKLER COMPANY, Pittsburgh, Pa., has issued some attractive illustrated cards calling attention to its facilities for furnishing complete kitchen equipments for hotels, clubs, public institutions, and the like. The company makes a specialty of these equipments in connection with the Butchers' Tools, Machines, Fixtures and Supplies, Refrigerators, Cold Storage Plants, Cooking Apparatus and Allied Specialties which it manufactures.

THE INDIANA RETAIL MERCHANTS' ASSOCIATION, said to have 11,000 members, at the conclusion of its recent annual meeting at Terre Haute passed a resolution condemning parcel post measures unequivocally and opposing the plan proposed by Postmaster-General Meyer, on the ground that it would be too costly for the Government.

THE PIONEER IRON & STEEL COMPANY, Kansas City, Mo., manufacturers' agent, has been appointed direct representative for the Southwest of J. C. Pearson Company, Boston, manufacturer of cement coated Nails, and Kirk-Latty Mfg. Company, Cleveland, manufacturer of Bolts, Nuts, &c.

ON the 23d ult., fire totally destroyed the old established plant of Charles W. Force & Son, Madison Iron Works, Madison, N. J. A new building, to serve as a temporary shop and office, is now under construction. The firm's collection of trade literature was consumed and copies of new catalogues, discount sheets, &c., are requested.

AN attractively printed booklet has been issued in honor of the seventy-fifth anniversary of the George Krause Hardware Company, Lebanon, Pa. The booklet contains an interesting sketch of the history of the house, presenting portraits of John D. Krause, the founder, and George Krause, his son, who died about two years since, after more than 56 years of active business life. Illustrations are also given of Lebanon as it appeared in 1833, of the store in which the the business was established, of the enlarged premises as in 1849 and 1856, together with views of the establishment as it exists to-day. From the modest beginning with a 10 x 12 room with 6 ft. of shelving and a 6-ft. counter, the business has developed into one of the largest and best equipped in eastern Pennsylvania. The company's operations cover six counties in the State, distributing Builders' and General Hardware, Furnace, Mill, Railroad, Machine Shop and Plumbing Supplies, Wood and Willow Ware, Sporting Goods, Ammunition, &c. The large building at present occupied was erected in 1888 and is furnished with all modern facilities and especially adapted for the requirements of the business.

SKATES AND SLEIGH BELLS.

"WELL," remarked the seasoned merchant, as he gazed at a window display of Skates and Sleigh Bells, "there's a window full of chance."

The new clerk looked at him inquiringly, for he had expected a word of commendation upon the display.

"Oh, yes, the display is all right—fine," continued the merchant, anticipating the clerk's inquiry, "but it won't sell Skates and it won't sell Sleigh Bells—not this weather. Don't you see it's raining? Nothing but rain and mud all winter, and here it is nearly the first of February."

"We've got an investment there," he continued; "yes, and it's going to *stay* invested till next winter or longer, or I'll miss my guess. Worse than fireworks, those things are."

"But we did finely with them last year," ventured the clerk.

"Sure!" exclaimed the merchant. "Froze up stiff at Thanksgivin' last year, and staid frozen till April—lots of snow, too. Couldn't get enough of them then! Ran out of Skate sizes in January; jobbers didn't have them; makers couldn't turn them out; could have sold this lot six times over *then*. But—well, that's just what I was saying, worse than fireworks—one year can't get enough, the next year tie up all the money you put into them."

"Don't you think we'd sell some of these if we cut prices?" inquired the clerk.

"No!" replied the merchant, explosively; "they don't want Skates and Sleigh Bells when there isn't any snow and ice. If the snow and ice come, they'll pay fair prices for them. There's nothing to do but *keep* them. That's all there is to it."

"But," persisted the clerk, "in your experience in the business haven't you found any way to overcome this uncertainty?"

"Thirty years at it," replied the merchant; "know the business from A to Z, but I've never yet learned how to prophesy the weather. You can't tell much more about the sales of Skates and Sleigh Bells than you can about the date of your own death. I confess that I don't even know how to buy Skates and Sleigh Bells. The one thing I've learned is *buy light*—that brings me to the point I want to impress on you. Last year you wanted to duplicate late in the season. Then last summer you wanted to buy heavy for this year because last winter was good. As a matter of fact, all we've got invested is right there in the window—*and this season that's too much*. I'd rather miss a few sales at the end of a good season—being already sold out—than to carry over a heavy load of dead capital. Put that in your pipe and smoke it!"

Holloway & Fowler, Fremont, Neb., have completed improvements in their store, which provide 1800 sq. ft. of additional floor space. The warehouse at the rear of the retail store has been reconstructed, and is finished with 4-in. cement floors. While principally a wholesale and retail Hardware house the firm has developed a large plumbing and heating trade, which is rapidly being extended.

J. R. Wear has bought out the Hardware business of M. D. Gonder, Kinsley, Kan.

PHILADELPHIA HARDWARE MERCHANTS' AND MANUFACTURERS' ASSOCIATION.

MEMBERS and guests to the number of nearly 200 gathered at the Bellevue-Stratford Hotel, in Philadelphia, on Thursday evening, January 30, to attend the twenty-second annual banquet of the Hardware Merchants' and Manufacturers' Association of that city. Previous to the banquet, President-elect Edward S. Jackson and Vice-President-elect Paul A. Griffith, Secretary-Treasurer T. James Fernley, together with the past presidents of the association, held a reception in the parlors of the hotel.

The banquet was served in the Clover Room, which was tastefully decorated with national, State and city colors. The speakers' table, which was elevated, was profusely decorated with flowers and Hardware; while the other tables, which were at right angles to the speakers' table, were decorated in a similar manner. Roses, carnations and cosmos predominated in the floral decorations.

The association had as its principal guests Hon. John E. Reyburn, Mayor of Philadelphia, who responded to the toast "Our City"; Rev. Robert Ellis Thompson, S. T. D., who addressed the gathering on "The Hardness of Hardware"; Michael J. Ryan, who replied to the toast "Our State"; Rev. John R. Davies, D. D., who spoke on "The World's Unrest"; and Hon. J. Hampton Moore, who made an address on "Our Inland Waterways." Among others who sat at the speakers' table were the following: President Edward S. Jackson, Vice-President Paul A. Griffith, Secretary T. James Fernley; ex-presidents William W. Supplee, Thomas Devlin, Hugh McCaffrey and Samuel Disston, ex-Mayor John Weaver, F. D. Mitchell, secretary, American Hardware Manufacturers' Association, H. B. Lupton, Pittsburgh, Charles W. Asbury, president, American Hardware Manufacturers' Association, Samuel F. Wilson, Alex. W. Stanley, William B. Riley, Joseph M. Rogers, John W. Wilkins, Jr., Frederick E. Underhill, Ellicot Fischer and N. B. Kelly.

After proceeding to the banquet hall, those assembled were called to order by T. James Fernley. Dr. John R. Davies, chaplain of the association, invoked divine blessing. William W. Supplee then introduced the president-

EDWARD S. JACKSON, President.

elect, Edward S. Jackson, who delivered a felicitous welcome to the assembled guests.

At the close of the banquet President Jackson, who served as toastmaster, called upon Rev. Robert Ellis Thompson, S. T. D., president of the faculty of the Central High School, Philadelphia, who made an interesting address on "The Hardness of Hardware." Michael J. Ryan responded in an eloquent manner to the toast "Our State." Rev. John R. Davies, D. D., followed, and in speaking on the toast "The World's Unrest," called particular attention to the growing hostility of the Orient to foreign goods, particularly China, India and Japan. Oriental countries were, he said, steadily pushing out the foreigner and his wares and developing their own resources. Hon. J. Hampton Moore spoke on the subject, "Our Inland Waterways," and referred to the commercial advantage to be obtained by the improvement of the present system of inland waterways along the Eastern coast. In the Middle West, he said, there was a concerted effort to obtain the recognition of the Government to the proposed deepening of the Mississippi River chan-

PAUL A. GRIFFITH, Vice-President.

nel, and the East should combine and organize so as to assert its rights to a share of the development of these national improvements. Mayor Reyburn responded to the toast, "Our City," touching on matters of local interest in an entertaining manner. During the banquet musical selections, largely in the vein of the topical songs of the day, were rendered by the Bellevue-Stratford Orchestra, those assembled joining in the choruses.

Garden implements, Hardware specialties and tools, which added largely to the artistic decorations of the banquet tables, were furnished by the following manufacturers: American Fork & Hoe Company, Garden Implements; Baeder, Adamson & Co., Match Safes; Henry Disston & Sons, Saws, Screw Drivers, &c.; Enterprise Mfg. Company, Food Choppers and Coffee Grinders; Germantown Tool Works, Hammers; Liveright Brothers, Manicure Files; Miller Lock Company, Padlocks; McCaffrey File Company, Manicure Files in leather cases; North Bros. Mfg. Company, miniature Screw Drivers; National Enameling & Stamping Company, Enameled Kettles; C. T. Ham Mfg. Company, Lanterns.

The committee having charge of the arrangements for the banquet consisted of Edward S. Jackson, chairman; A. S. King, Walter E. Devlin, Joseph J. McCaffrey, Arthur K. Liveright, Charles Z. Tryon, Harry C. Disston and T. James Fernley, who were generally complimented for their efforts in making the twenty-second annual banquet one of the most successful that has ever been held by the association.

THE WIRE GOODS COMPANY, Worcester, Mass., has issued a pocket edition of its new catalogue intended for general distribution among merchants, so that each clerk having use for a copy may have one of his own for ready reference in his dealings with customers or in making up orders for new goods. The original catalogue, to which reference was made in our issue October 24, goes into very full details of sizes and prices of Wire Goods, giving a great deal of information valuable to handlers of Wire Hardware, Kitchen Wire Goods, Wire Nails, Tacks and Staples. The pocket edition is a complete reproduction of the larger volume, with 240 pages, but reduced in size from 8½ by 11½ in. to 4½ by 6 in. It is planned to issue a discount sheet of the same size. The new edition is bound in telephone cover stock, which has much durability under severe handling. The company will be pleased to send as many copies as desired to firms who are interested.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

UNITED TRUCK SCALE COMPANY, Toledo, Ohio: Circular illustrating and describing Truck Scales for various purposes and giving testimonials.

CLINTON E. HOBBS, Boston, Mass.: Illustrated catalogue C, containing price-lists, tables, &c., of Chain, Chain Hoists and Appliances.

WM. H. HASKELL MFG. COMPANY, Pawtucket, R. I.: Illustrated price-list of Diamond Expansion Bolts, Shields, Toggles, &c., for which the company is agent.

COOPER & MCKEE, Brooklyn, N. Y.: Handsome catalogue illustrating and describing in great detail the company's elaborate line of Opalite Glass Lined Refrigerators for all purposes.

CHAS. R. MORSE MFG. COMPANY, Chicago: Booklet referring to Morse Rotary Wage Table for figuring payrolls and labor costs.

STANDARD VARNISH WORKS, 29 Broadway, New York: Catalogue of S. V. W. insulating specialties, containing valuable information and tables; also descriptive catalogue of house finishes and price-lists of Carriage and Auto Car Varnishes.

D. F. JONES MFG. COMPANY, Gananoque, Ont.: 1908 illustrated price-list of Shovels, Spades, Scoops, Draining Tools, &c.

VAUGHAN & BUSHNELL MFG. COMPANY, Chicago: Special catalogue of Eagle brand Hammers for 1908, with new list prices on nickel plated Plain Face and Bell Face Nail Hammers.

HEMP & CO., St. Louis, Mo.: Illustrated catalogue of Patent Lock Stove Pipe, Elbows, Sheet Metal Goods and Japanned Ware Specialties.

CHICAGO WIRE CHAIR COMPANY, Chicago: Illustrated catalogue covering an extensive line of Wire Chairs, Stools, Tables, &c.

ARROW CAN COMPANY, 35 Warren street, New York: Eight page illustrated folder circular of Ash, Garbage, Waste and Oil Cans in various styles and sizes, some for the most exacting service.

GENEVA CUTLERY COMPANY, Geneva, N. Y., represented by Henry Berkele, 43 Leonard street, New York: Catalogue of 36 pages, illustrating Razors and Cutlery Specialties, including Razor Blanks for barber supply and cutlery trade, Handles in facsimile colors, &c.

GLOBE VISE & TRUCK COMPANY, Grand Dapids, Mich.: Catalogue, 16 pages, relating to a special line of Quick Acting Wood Workers' Bench Vises; also an illustrated poster describing Ball Bearing Trucks, suitable for factory and warehouse use.

CINCINNATI HORSE SHOE & IRON COMPANY, Cincinnati, Ohio: Illustrated catalogue of Horse and Mule Shoes.

ARLINGTON MFG. COMPANY, Canton, Ohio: Catalogue of technical Paints for all purposes, especially for the use of railroad companies, structural builders, contractors, manufacturers and industrial plants, and for protecting wood, steel or galvanized work.

TERRELL'S EQUIPMENT COMPANY, Grand Rapids, Mich.: Illustrated catalogue with price-list of factory equipment, such as Racks, Shelving, Bins, Trucks, Waste Cans and Sheet Metal Goods.

GLAZIER STOVE COMPANY, Chelsea, Mich.: Illustrated catalogue of Brightest and Best Steel Ranges, Oil and Gasoline Stoves and Ovens.

SHELBY SPRING HINGE COMPANY, Shelby, Ohio: Catalogue No. 14, containing illustrations and price-lists of a varied line of Builders' Hardware and Hardware specialties, including Shelby Chief Double Acting Floor Hinges, Ball Bearing Spring Hinges, Push Plates, Drawer Pulls, Sash Lifts, Cupboard Turns, Sash Locks, Barrel Bolts, Screen Door Hinges, Wire Coat and Hat Hooks, Cast Wardrobe Hooks, &c.

HOLMQUIST & CO., Chicago: Folder No. 14, referring to Holmquist Curtain Stretchers.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM PATTON-YATES HARDWARE COMPANY, Omaha, Neb., which has been incorporated with a capital of $10,000, to conduct a retail business.

FROM BOYES-BECK HARDWARE COMPANY, Caldwell, Idaho, in which G. A. Beck has recently purchased an interest.

FROM W. S. WOOLSEY, who has engaged in the Hardware, Stove, Implement, Paint and Sporting Goods business, at Dalton, Neb.

FROM N. W. BRAMMEL, Ozawkie, Kan., who will open a general Hardware store about April 1, and will put in an entirely new stock and fixtures.

FROM SWANK & SON, Brunswick, Md., who have opened a new Hardware, Stove and House Furnishing Goods store.

FROM HALL & BRUHN, who have embarked in the Hardware, Stove, Paint, Sporting Goods and Furniture business, at Wilbur, Wash.

FROM ZAPF HARDWARE & FURNITURE COMPANY, Astoria, Ore., which has succeeded to the business of Henry Zapf.

FROM F. W. HINSEY, Murray, Iowa, who is building a store at Moffitt, N. Dak., where he will open up in the Hardware, Stove, Tinware and Paint business about February 15.

FROM KLUG BROS. & NEUMAN, Pierce, Neb., who have purchased the Hardware, Stove, Implement, Paint and Sporting Goods business of Leo Gishpert.

FROM JOHN RAWLING, Scranton, Pa., who is rapidly developing the Hardware department of his Sporting Goods business.

FROM CASON, MONK & CO., Nacogdoches, Texas, whose Hardware, Stove, Implement, Vehicle, Supply and Machinery establishment was slightly damaged recently by fire.

FROM UNION HARDWARE COMPANY, which has recently been organized to conduct a retail business at Hope, Ark.

FROM W. A. DEAN, North Newark, N. J., who handles Hardware, Tinware, Paints, &c.

FROM C. W. STITES, who has acquired the Hardware, Implement and Paint business of J. L. Mable, Independence, Iowa.

FROM FINCHER-NORRIS HARDWARE COMPANY, Covington, Ga., which has bought the bankrupt stock of Covington Hardware Company and will at once begin active business.

FROM E. B. HORSMAN & SON, who have opened a new Hardware, Stove, Paint and Sporting Goods store at Vancouver, B. C.

DEMING COMPANY, Salem, Ohio: Illustrated catalogue, 1908, of Spray Pumps, Nozzles and Appliances for various uses.

A New Parcel Post Measure.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., February 4, 1908.

AN effort is being made in Congress to line up the minority, which includes practically all the Southern representation in the House, in favor of a new bill providing for a parcel post on rural routes, which has just been presented by Representative Griggs, of Georgia. There is no evidence that the Post Office Department is interested in this movement, and the Griggs bill differs materially from the Sims measure, which is understood to have been drafted at the Postmaster-General's direction; nevertheless, there is reason to believe that the department would accept the Griggs plan—certainly if it were offered as an experimental project—and retailers in all lines should follow developments with close attention.

The Griggs Bill.

The bill as presented by Mr. Griggs provides as follows:

Be it enacted, &c., that, beginning July 1, 1908, there shall be a parcel post limited to 12 lb. on every rural route in the United States. Said parcel post shall be confined exclusively to the rural route upon which the parcel originates and its rural connections, and shall not extend beyond said route upon which it originates and routes with which said route connects directly without the intervention of railroad mail service, star route, messenger or any other form of mail service.

Sec. 2. That the rate of postage on such packages shall be 5 cents for packages weighing not more than 3 lb., 7 cents for packages weighing not more than 5 lb., 10 cents for packages weighing more than 5 and not more than 8 lb., and 15 cents for all packages weighing more than 8 and not more than 12 lb.

More Radical Than the Sims Bill.

It will be noted that this bill is much more radical than that heretofore presented by Representative Sims, which has the Post Office Department's indorsement. The proposed cheap merchandise service is given the same limitations as applied to rural routes emanating from a single office, but in the matter of rates a much lower scale is specified. The Postmaster-General's plan is to charge 5 cents for the first pound and 2 cents for each additional pound up to 11 lb., making a maximum rate of 25 cents for the largest parcel eligible to transportation in the mails. Mr. Griggs, however, would have the service transport a 3-lb. parcel for 5 cents and a 12-lb. parcel for 15 cents. This would mean a rate on packages of merchandise of maximum size of only 1¼ cents per pound. Such a rate would be far less remunerative than that proposed in the Sims bill, not only because of the lower schedules of charges, but because it is fair to assume that the handling of merchandise on rural routes would be so stimulated as to require costly additional equipment and possibly a largely increased force of carriers.

A standard rural route is approximately 24 miles in length and serves not less than 100 families. The average carrier under existing conditions is just about able to perform the service, according to the schedules prepared by the Post Office Department, but resignations are constantly being received from those who find the service laborious, and readers of *The Iron Age* are familiar with the campaign that has been on foot for several years to secure an increase in the pay of carriers, which Congress in 1904 raised from $720 to $900. It goes without saying that any material increase in mail matter to be handled, especially if it partook of the nature of an express business involving the handling of large numbers of packages, would promptly result in the demoralization of the rural service and would force a reorganization on a far more costly scale than that now existing. The assertion that the revenues would increase proportionately with the expense is unsupported by figures or other convincing data, and even if it were true, it is difficult to see how any benefit would accrue from a project that would tend merely to keep the residents of rural communities away from the local retail stores.

In the "Interest" of the Local Merchant.

A rather ingenious argument is being used among Southern members of Congress in support of the Griggs bill. It is asserted that for several years the mail order houses have made large gains in the South and have secured connections with manufacturing concerns in that section, with a view to making short haul shipments direct from factory to consumer. The necessity for counteracting this movement is emphasized, and it is urged that "something must be done for the local retailer" to help him in his fight against his big competitor. The Griggs proposition is put forward as providing the relief "demanded" by the small merchant. Of course, it will be conceded that the statement regarding the activity of the mail order business in Southern territory is true, but it is equally true that the passage of the Griggs bill would simply afford these big concerns an opportunity to distribute their wares at far less cost than at present, while the retailers of the South, who cannot afford to pay postage on their current sales, no matter how low the rate may be, would find themselves at a much greater disadvantage than at present.

The Directory Scheme.

The scheme of the mail order houses to lobby through a bill under which they would be enabled to secure the names and addresses of all patrons of rural routes on the plea of compiling directories, has attracted much attention throughout the country, not only among retailers but among up to date manufacturers, who appreciate the necessity of protecting their customers against discriminatory legislation. President John H. Hanan of the National Boot and Shoe Association has taken up the cudgel against this bill, and has addressed a letter to every member of his association, in which he urges them to communicate with Congressmen and secure their opposition to the bill.

The National Association of Retail Druggists and several organizations in the tobacco trade have taken the matter up, and petitions, memorials and personal letters in opposition to this bill have already begun to pour in upon Senators and Representatives.

National and Pennsylvania Mutual Fire Insurance Companies.

AT the annual meeting of the directors of the National Hardware Mutual Fire Insurance Company, held at the Fort Pitt Hotel, Pittsburgh, Pa., January 22, at which a full Board of Directors was present, the following officers were unanimously elected: C. H. Miller, Huntingdon, Pa., president and treasurer; W. P. Bogardus, Mt. Vernon, Ohio, vice-president; W. P. Lewis, New Albany, Ind., secretary.

On the following day, at the same time and place, the directors of the Hardware Mutual Fire Association of Pennsylvania also met and elected the following officers: C. H. Miller, Huntingdon, Pa., president; George V. Thompson, Mt. Jewett, Pa., vice-president; George W. Hackett, Sunbury, Pa., treasurer; W. P. Lewis, New Albany, Ind., secretary.

Mr. Lewis in assuming the duties of secretary of these two companies has removed to their established home office in Huntingdon, Pa., and has assumed the active management. Mr. Lewis was the first president of the National Retail Hardware Association and has twice been president of the Retail Hardware Association of the State of Indiana. He is widely and favorably known and is admirably equipped for the duties upon which he has entered. Mr. Lewis intends to devote his entire time to furthering the interests of the two companies and will attend a number of the State Hardware conventions soon to be held.

THE WATERLOO HARDWARE COMPANY, Waterloo, Iowa, besides making a specialty of the manufacture of United States Rural Mail Boxes, is gradually expanding its Hardware trade in a wholesale way.

Texas Retail Hardware and Implement Association.

THE tenth annual convention of the Retail Dealers' Hardware and Implement Association of Texas was held at Dallas on January 21, 22 and 23. The meeting was an exceptionally interesting and successful one, and was well attended. The convention was called to order on the morning of the 21st inst., by the president, W. A. Spangler, Bonham, who introduced in turn Mayor Hay of Dallas and H. S. Keating, representing the Dallas Implement, Machinery and Vehicle Club, who welcomed the Hardwaremen to the city in felicitous addresses.

Mr. McCullough's Address.

An interesting address was delivered by Mr. McCullough, representing the National Wagon Manufacturers' Association. After referring to the benefit secured by means of organized effort, he spoke in part as follows:

I would like, however, to correct an impression that has for some time prevailed with some people, that the principal use commercial organizations are put to is to increase profits by advancing prices, and this charge has been laid at the door of our association, because manufacturers, both in and out of our organization, have found it necessary because of increasing cost to make changes in their prices. Let me say frankly that we recognized some time ago that one of the greatest menaces to our line of trade was unintelligent competition, if you please—the fellow who kept

No Account of His Costs

and who made his prices on what he heard some one else was doing, the man who cut the quality of his goods in order to cut his prices, or who gave eternity of time, believing that the volume of business meant success. We have been working on this class for some time with fairly satisfactory results, but we got these results in a different way than many supposed—not by binding agreements or penalties, or any other sort of force, but simply appealing to them to learn their cost in detail, and, when necessary, showing them how to do it. You can get equally satisfactory returns in your own line if you will try it, for it is no fiction that more business men throw away profits by ignorance than by willfulness.

The Increased Price of Wagons.

In considering the increase in price of Wagons during the past year, and the fact that Implements have not increased in price much within the same period, the fact seems to be overlooked that the construction of Implements has changed very materially from a combination of wood and iron to one almost entirely or iron and steel, while the Wagon contains more wood than ever before; consequently, with an advance of over 100 per cent. in the cost of good hardwood during the past 10 years and the required investment of double the amount of capital necessary to carry it for seasoning, it does not require much of a scholar to account for every dollar's increase, to say nothing of the advanced cost of doing business in all lines.

No one can find fault with the manufacturer or the retailer who makes a study of his costs and demands prices that will net him a fair profit, but even all Wagon manufacturers do not profit by the efforts made in their behalf, for during the past few years an output of over 25,000 Wagons has been taken off the market by failures, and the fundamental reason of it was the manufacturers' lack of cost knowledge.

Selling Terms.

Just a word now as to selling terms, which is the subject demanding the attention of business men all over the country, especially in lines allied to the Implement and Vehicle business, because you and we have been a little more reckless about it than most any one else. It would be amusing if it had not such a serious side. Here stands the manufacturer, who must pay cash for everything that goes into his wares, while over there stands a consumer, who gets cash for everything he sells; still he does not pay cash except for luxuries or when some catalogue house offers him what he considers a bargain. Over $53,000,000 of his money went into the bank account of one of these mail order houses in 12 months, or an increase of over 25 per cent. over its previous statement, and there are many other mail order houses. Of course, this is not all for Implements, Vehicles or Hardware, but enough of it was to bring some of these goods to Texas.

Encourage Cash Patrons

We cannot change a time giving custom established when the State started to a cash business at a single leap, but we can come nearer meeting this direct sales competition if we talk the merit of goods more strongly and give those who can pay the cash the greatest possible advantage for their money.

It is not my purpose to tell you what terms you should make, nor to ask you to suggest terms for the manufacturers or jobbers, but simply that we are all three on an old time style basis, and if we do not change to more modern methods there will be an evolution one of these days that may land us high and dry. We are trying to perform double duty as merchant and banker, but we will succeed better if we get out of the banking business and turn our capital oftener.

I have no fixed set of terms to present to you for the Wagon manufacturers. There has been no agreement in this matter, nor on any other, but each manufacturer will present to his trade the best terms he feels able to make, and you will no doubt find them different in some cases than heretofore.

Co-operation Desirable.

As a general proposition it is felt by most manufacturers that all Wagons shipped during any current year should be paid for out of that year's crops, and that the due dates on all shipments should be arranged accordingly. They believe also that in all lines allied to Implements making necessary changes at the same time little, if any, trade disturbance can result, and therefore we hope you will co-operate in this effort to raise the whole Implement line a notch higher this year. Every economy of this kind will be felt in the matter of prices, and with the absolutely free and unrestricted competition that exists to-day you are insured getting the benefit of it. I trust you will make no mistake in judging the spirit in which the manufacturers present these matters to you to-day. It is in no sense one of dictation, but rather an explanation of the conditions we are absolutely forced to meet, and while these conditions perhaps have not been pressed upon you to the extent that they have upon us, it is only a question of time when they will reach you, and we are here to-day to suggest co-operation in applying a remedy that will benefit us both, not any more ourselves than it will you.

There is a very strong reason why terms should be shortened, that is that it puts the control of one's own business in one's own hands rather than in the hands of one's competitors, and as independence is valued by every man, these changes are a long step in that direction.

I leave these suggestions with you for what they are worth, but I desire to assure you that in working out these problems you will have the co-operation of the manufacturers and jobbers, whose purpose will be to make it as easy as possible, for they realize fully the desirability of doing these things in a manner that will not disturb trade conditions. But, nevertheless, certain changes are imperative, and the sooner we take hold of them and make them the sooner the task is finished; and as already stated, it is done by co-operation easier for all concerned, and the benefits will be equally divided.

Address of Newell Sanders.

The address of Newell Sanders, president of the National Association of Agricultural Implement and Vehicle Manufacturers, with its plea for co-operation between merchants and manufacturers, was listened to with much interest. Mr. Sanders spoke in part as follows:

The National Association of Agricultural Implement and Vehicle Manufacturers sends me here to bear you greetings for the coming year. I come to renew the friendship that has existed between your association and ours, and to express our strengthened belief in the wisdom of your associating yourselves together. I am here to give you fresh assurances of our good will and our sincere desire to co-operate with you in whatever is to your benefit as well as to our own. In this connection I wish to call your attention to the fact that next to your own association your greatest safety lies in our association. Every time we enroll a new member we add to the list of manufacturers who will do business exclusively through you and who will defend you against all comers. We have not changed our purpose in the least of recognizing you and of using you as the sole medium for the sale and distribution of the Implements and Vehicles we make.

It is also my pleasant duty to express to you our appreciation of your loyalty to us and of your strenuous work during the past year. We are not forgetful of the way you have vouched for our skill in design, our honesty in construction, and our intention to put full value into the goods. You have in most cases protected us against imposition. You have encouraged the timid buyer, have interested and educated the farmer, and you have shown him the cheapness of machines as compared with human labor and human life, which has all been to our advantage as well as to your own. You have made things go, and I here gratefully acknowledge the service.

Cost of Business Conduct.

We ask you to continue your endeavors to get all your members into ways of counting the cost of doing business, so as to insure themselves a profit and to reduce our risk in selling to them, and that they in every way endeavor to reduce their expenses and our expenses of conducting business. All they save for us will be saved for them finally. We are asking the dealers in all the States to help prevent unfriendly and unfair legislation to manufacturers living outside of the State. We especially ask this of you, Texas dealers, for our association has been obliged to spend thousands of dollars on account of a suit now pending in this State in which many of our members are interested, and in which much money will yet have to be spent in order to test the constitutionality of the law. We ask you to close up your sales when you deliver the goods, because by so doing there will be less complaint coming back to you and to us. We ask you to more than ever protect us against unfair claims for repairs. We ask that you treat fairly the inquiries sent you by such manufacturers.

Turning from Dangers Within to Dangers Without

we find what should be our chief work and concern for the coming year. It has been the custom for us to give you long time and for you in turn to give the farmer long time; but a cash system has been coming. Manufacturers formerly got long time on material for which they are now compelled to pay cash. They have been trying to stand this by borrowing large sums of money, but within the last few months borrowing has been difficult and high rates of interest had to be paid. So the shortening of time given on sales is imperative.

Then the cash system is coming from another direction—cash sales to the farmer by mail order houses. This may not be so serious yet in Texas as in the States further north, where it is coming very fast. It has brought prices to the farmer, and these prices will have to be met. I do not overlook the fact that there are many good reasons why the farmer should buy of the home dealer instead of a mail order house, but the question of prices will generally govern his actions. The only way to meet this new form of competition is for all of us

To Get Nearer to a Cash Basis.

Such farmers as pay cash to catalogue houses can also pay cash to you. If they were to pay you cash you could in turn pay us cash. It is true farmers cannot always pay cash, but in such cases there is a convenient equivalent, which is an interest bearing note. Just now it is difficult to use such notes, but generally it can be done. The concensus of opinion among manufacturers is that 1 per cent. a month is about the proper cash discount. This, for the average time given on Implements, will in most cases make up the difference between the time price you have been giving and the cash price, including freight given by catalogue houses. On the cash or interest plan the uniform retail price system which is so much deviled can be maintained. We dislike to speak of such an unpleasant alternative, but we are face to face with such conditions, that unless you can sell for nearer cash and buy for nearer cash at a lower figure, you are in danger of not being able to control the business, and we, in order to get it, will have to seek other channels for marketing our goods. It will take some time to bring about this new cash system, but it is high time that the beginning be made. We pledge you to most hearty co-operation, and we have full confidence in your being equal to the emergency.

Mr. Spangler's Presidential Address.

The annual address of W. A. Spangler, president, was terse and suggestive. We give the following extracts from it:

I am pleased to be able to state a fact that all now know, and that is that the obnoxious Occupation Tax law has been repealed, and from this time on that source of drain on the business of this State will be stopped. While other organizations and men have helped in the repeal of this law, the real success is due entirely to the labors of this association. We claim the right to say that the benefit that will accrue to the trade is due to us.

Landlord's Liens.

I desire to reiterate what was said by our former president, Mr. Penick, relative to the landlord's lien in his address last year, and to urge on our members and our Legislative Committee the importance of trying to have some changes made for the merchant's benefit in that general line. I believe that good will come to the general business of the country and that no one will be hurt.

Peddlers' Tax.

As you know, we tried to have a peddlers' tax law enacted at the last meeting of the State Legislature. We were not successful in this, but I hope the matter will receive your careful consideration. The facts justify us in demanding some action in this matter. I believe that we can leave the matter in the hands of our Legislative Committee, providing each and every member of this association will do his part when the time arrives.

The Pistol Law.

I desire to simply mention the passage of the Pistol law by our last Legislature. That law will be tested by the courts of our State, and I feel confident that it will be found to be unconstitutional; if not, then we will try to get some modification of the law, so that it will not give the catalogue houses and the mail order houses all the advantages in the State. Broadly speaking, while I do not care much personally about the law or its enforcement, yet it is of great interest to many of our members, and as we are out for the good of the many and for every member, I am willing to fight the battle when it affects any one or all alike. Under the workings of this law the number of pistols that are sold in the State will not be greatly diminished, and it is just that much taken from the general trade and given to outsiders that pay no taxes to keep up the State.

Formation of Local Clubs.

I believe that if it is at all possible we should have local clubs in every county in the State. It will bring the dealers more nearly together and help in many ways. Wherever these clubs have been tried they have been found to do good work.

Membership Certificate.

I also believe that we should have a certificate of membership, and that when a new firm or dealer becomes a member of this association, he should be issued this certificate and received into our association with a vote and with some signs that we are glad to have him as a member. This certificate of membership should be framed and hung in the office so as to tell every man that enters the same that we are not ashamed of our present company.

Parcel Post.

The parcel post and the catalogue house business are so closely allied that they may be said to be twin sisters. In fighting one we fight the other. No man can hope to do a successful business when both of these stray dogs are allowed to run loose at large. Every member of this association, as well as every dealer, whether a member or not, should get good and wideawake on the importance of this matter, and get to work. I believe that the association can do no better work than to begin plans for fighting the parcel post to a finish right now.

Trade Ethics.

I believe that our members have been loyal to the maxim of trade ethics between the jobbers and the manufacturers, and I think we are therefore in a good position and condition to demand true trade ethics by all jobbers and manufacturers. I do not hold that we are the only people that have rights, but I do claim that when we have acted justly then we are in fine shape to claim justice and not before.

Express Rates.

I am fully convinced that better express rates are being given to catalogue houses than the average business man can get. There is great need of work to make all rates equal. I hope that this association may go on record, with a view to the Federation taking this matter up and helping in the matter.

Secretary McManus' Report.

The report of J. W. McManus, secretary-treasurer of the association, was a voluminous one and covered many subjects of interest to the members. The report was the fourth annual contribution of Mr. McManus and was as follows, in part:

The retrospect shows a gratifying increase in our membership. In this connection I wish your attention called to the debt of gratitude we owe to certain of our brethren who, in spite of the press of their personal business, have made enthusiastic efforts, by writing letters and in other ways, to interest outside dealers in the association. It is just such loyal enthusiasm as this that

should be felt by every individual member. May not one of us ever slip an opportunity for speaking a good word for our good organization; on the contrary, if an opportunity does not present itself, let us make one. This is the spirit that will insure for the association increase in numbers and increase in beneficial power.

Insurance Exchange.

The first year of a concern, like that of a baby, is always fraught with perils and difficulties. It is with pleasure that I announce that our Insurance Exchange now a thriving infant and needs but the continued and increased support of our members to nourish it speedily into vigorous adulthood. This, however, it must have. Unfortunately, some of our people have been waiting to see if the exchange proved a success before subscribing to it. It would be just as reasonable to wait to see if a child were going to live before feeding it. However, these hesitating ones are now left without excuse for longer withholding their support, for the exchange has a record of nearly $200,000 insurance written in less than a year.

The exchange offers them superior inducements, and under right conditions they will be quick to recognize it and join the association in order to avail themselves of these privileges, if for no other reason. If, however, they see the exchange stunted in its growth by a lack of faith and support on the part of the very organization of which it is a part, we cannot altogether blame them if they do not manifest confidence and interest in it.

Parcel Post.

We are all familiar with the parcel post scheme which is being so strenuously pushed by Postmaster-General Meyer. If it is carried into effect the result will be so disastrous to the dealers that many of them will actually be forced out of business. In the face of this serious danger it is supremely necessary that we should form ourselves into an impregnable wall of adamantine opposition. Let our watchword be "Unity" and "Determination," and we shall win; otherwise, it is altogether probable that we shall fail.

Local Clubs.

One of the most effective lines of work that suggests itself to me for the coming year is the organization of county clubs. When men of identical interests get together in a social way and talk over their successes and failures, their mistakes, and what they have learned by them, they come to understand both their business and each other more thoroughly. Again, these clubs can be made effective recruiting stations for the association. Dealers who are not members coming in contact with those who are will see more and more the advantages to be derived from a connection with our organization; this in proportion, of course, to the zeal of said members in talking up the association.

Classification of Merchants.

Another subject of great importance is the proper classification of dealers. Sometimes a professed dealer, on being invited by one of our solicitors to join the association, states that he cannot do so, as he is not really a dealer in Hardware, Implements or Vehicles. If he says this merely as an excuse for not joining, he does it to his injury, for the reports of our solicitors are made public, information based on them being given out to the jobbers, commercial agencies, &c.

If any of our members discovers that a dealer is announcing himself, by his letterheads and otherwise, to be in the regular Hardware, Implement or Vehicle trade, when he is not entitled to recognition as such, he should first mention the matter to the dealer himself, and then call the attention of the commercial agencies to it, that they may classify him correctly. Members should also notify the information bureaus when such a case is found. Jobbers and manufacturers who really desire to protect the retail trade are sometimes deceived by such pretences, and thus led into selling to those who are actually nothing more than consumers. If constant vigilance were exercised along this line there would be fewer attempts made to secure wholesale prices unfairly.

Information Bureau.

I wish to make an earnest appeal to all members who have not already done so to avail themselves of the privileges of the information bureau. We should be very careful that we do not give any of our patronage to those jobbers and manufacturers who fail anywhere to protect the interests of the retail dealer. It is not fair to outselves to do this, and it is not fair to those jobbers and manufacturers who protect our interests. In order that we may make no mistakes in this direction we need to keep in close touch with the information bureau.

Association Solicitors.

Another subject of importance to which I wish to call your attention is that of our traveling men. Too often they send in discouraging reports, having been unable to secure business because of indifference or a spirit of postponement on the part of those whom they have approached. If you are not a member, and our solicitor asks you to join the association, do not put him off by saying that you will come in at the convention. Even if you have not the ready cash for fees and dues, make out your application with the promise to pay later; this will encourage the agent and make us feel that it has been worth while to send him out. Your promise to come in at the convention is necessarily indefinite, however good your intentions, for everything in this world is uncertain, and when convention time rolls 'round you may be for some reason unable to attend, and the temptation to postpone joining still longer will be strong.

On the other hand, if you are a member, and our man calls on you to talk about the exchange, do not content yourself with the excuse that you have no expirations near. By the time you have a policy about to expire the chances are that you will have forgotten to give the exchange your business, and the local insurance agent will get it—perhaps renewing the policy during your absence, you having neglected to advise him that you intended to place it elsewhere. We have been trying to impress upon our people the fact that we accept applications for insurance to be written many months later. We *want* them; they are an earnest of the support of our members.

Trade Journals, Their Value and Influence.

Beyond question the most successful tradesman is he who takes advantage of every opportunity to learn more about his line of business and the modes of handling it. This is the reason why so much emphasis needs to be laid on the importance of attending our yearly convention; but it is not enough for the dealer to depend upon the stock of new ideas he lays in on such occasions. A convention comes only once a year, but there are being issued weekly and monthly publications that are intended to keep the dealer posted regarding the latest trade conditions and developments, and it is money in his pocket to subscribe to a good number of these and read them when they come. He should also have his employees take them home and read them thoroughly.

A great deal is said about being "up to now," and that little phrase is pithy and significant. The world moves faster than it used to, and the way to succeed the fact and move along with it, perhaps it would be better to say. It is easy for a dealer to regard his store complacently, and believe that it lacks nothing in the way of goods and wise methods of arranging and disposing of them; but if he will read the trade papers he will soon see that some of his business brethren with fertile brains have inaugurated superior systems which it will be to his advantage to imitate. Under the searchlight of comparison defects will quickly be detected and remedies supplied. Again, these periodicals furnish food for thought by keeping the dealer continually face to face with the existing problems and impending evils that confront the merchant. If he ponders this well he will be prepared on an occasion like this to discuss them intelligently and crystalize his conclusions into wise and decisive action.

Furthermore, the dealer needs the trade periodicals to keep him informed as to the work that is being done by his own and other associations. There is nothing like plenty of information on these points to maintain enthusiasm in a member and inspire him to better efforts. It cheers him up when he is inclined to be discouraged and feel as though he was fighting the battle all alone. We are all familiar with the old saying, "In unity there is strength," and we recognize its great truth; it seems to me that we might invent another and equally true one: "In comradeship there is encouragement."

Canvasser Question.

It is plain that the solution of the canvasser question lies with the dealers themselves. By refusing to accept the services of canvassers they can make it unprofitable to the manufacturers to employ them. This step has been taken in some places and is an example that ought to be followed by dealers everywhere.

Warranty on Vehicles.

There are several matters on which we have cause to congratulate ourselves. One of these concerns the Vehicle warranty. The Carriage Builders' National Association at their convention 15 months ago passed a resolution favoring its discontinuance and appointing this subject for special consideration at their next annual meeting. When they met last October, so far from proceeding to carry out the plan outlined, they ignored it entirely. This triumph is due to united and vigorous protest that went up from the dealers at their various conventions and is a demonstration of the importance and power of an assembly like this.

Discount on Repairs.

Another item of success is the concession of 5 per cent. discount on parts and repairs, secured from the Interna-

tional Harvester Company by the National Federation at its last convention. This in a large measure nullifies the injury to the trade of excessive express charges. The best way to deal with any evil, however, is to remove it; counterbalancing it should be regarded as merely a form of temporary relief. There is no reason why the express companies should reap unreasonable profits, and the matter of restricting them in this particular should be laid before Congress for its prompt consideration.

Windmills and Threshers.

The question of having standing committees on Windmills and Threshers has been discussed to some extent heretofore, and I would recommend that before this convention passes into history such committees be established. I would also recommend that a Standing Joint Committee composed of five members of our association and five from the Dallas Implement and Vehicle Club be appointed to confer upon any questions that may arise concerning the interests of members of either organization.

Manual and Directory.

It is to be hoped that every one who receives a copy of our manual and directory will read same carefully and then keep it where it will not get misplaced. We justly take great pride in this our annual publication, and strive to make it better each year than it was the year before. Its purpose is just what it always has been, only a little stronger and surer. It is valuable as a reference book, containing as it does a list of the members of the association, our constitution and by-laws, a full report of the convention proceedings, our insurance plan, and other information of interest and benefit. In this connection I wish to speak a word for the firms which advertise in its pages. They help us by their patronage, and we ought to help them by ours, giving them the preference over firms that have not placed their advertisements with us.

Association Emblem.

The question of an association emblem has been touched upon at several of our previous conventions. As our organization becomes financially stronger we expect to be able to furnish this to our members; meanwhile, I would suggest that each have printed on his letter head the words "Member of the Retail Dealers' Hardware and Implement Association of Texas." This will have a salutary influence upon the dealer himself by continually reminding him of his membership, with its responsibilities and privileges, and will thus increase his pride in it. The jobbers and manufacturers who receive letters bearing this significant announcement will be more deeply impressed with the importance of the association. Also dealers who are not members will gradually find themselves desiring the right to print those words on their letter heads; so the adoption of this plan will prove beneficial in every way.

Retailing of Goods by Jobbers and Manufacturers.

We ought to make still more emphatic the stand we have previously taken protesting against the manufacturers and jobbers trespassing on the rights of the retail trade. When they realize that we have a keen eye on them and have no intention of relaxing our demand for just treatment, they will respect our interests and keep within their own proper spheres.

The Harvester Committee's Report.

The report of the Harvester Committee was presented by W. N. Jackson, and was as follows:

So far as the International Harvester Company of America is concerned, it is a thing of the past in Texas, as on the 12th day of August, 1907, it cancelled all contracts in Texas and withdrew from the State, which we think was a hard blow, both to the dealers and the farmers, as this company had been very lenient with its customers through the hard years in the wheat growing section, and had extended them accommodations by carrying the farmer's notes for him in those trying times.

The Texas Harvester Company, which was organized to do a jobbing business in Texas, will handle the International Harvester Company's machines, &c., and will still continue to make commission contracts on repairs, and they have agreed through their manager, J. M. Johnston, to allow 40 per cent. discount off 1908 price-list as commission, which we regard very fair and equitable. This company is formed by Texas men with Texas money, and we think it should have the loyal support of all Texas dealers, as your committee finds them willing to do all in their power to benefit the dealer in the retail trade.

As regards the canvasser problem, will say when the trade demands it they will furnish the agent, the canvasser, and will pay his salary, and the local agent will bear the other expenses necessary. This matter, however, is left entirely with the local agent. We would recommend that under the conditions now existing the Harvester Committee be discharged, as in our judgment we will no longer need one.

Report of Freight Committee.

James R. Adams, chairman of the Freight Committee, presented an able and interesting report, from which we make the following excerpts:

To the Freight Committee there are at least two perplexing problems—i. e., the one of rates, the other of expedition, neither of which we have been able in any measure to solve and come to you with the bare statement of conditions as they are, with the hope that this body may find itself able to assist in their solution. Texas is no longer a pioneer country either from the standpoint of business transacted or the ability of the railroads, if they will do it, to give us quick transit at a reasonable rate. By comparison it at once becomes apparent to any thinking business man that there is an appalling and a discriminating, as well as an unaccountable difference in the rates south of St. Louis and east of the same point. The difference amounts approximately to 60 per cent., a difference which is entirely out of proportion, if, in fact, there should be any difference at all.

A Comparison of Rates.

For instance, on the same classification from St. Louis to Tyler, a distance of 592 miles, the rate on Implements, carload lots, is 74 cents per 100 lb., while from Chicago to Kansas City, 458 miles, the rate is 30 cents; Indianapolis to St. Louis, 240 miles, the rate is 13½ cents; Buffalo to St. Louis, 741 miles, the rate is 22 cents; Chicago to New Orleans, 923 miles, the rate is 33 cents.

Take another classification. On Axes, Pittsburgh to St. Louis, 621 miles, the rate is 27½ cents per 100 lb., while from St. Louis to Dallas, 679 miles, the rate is 79 cents per 100 lb. On Stoves, Pittsburgh to East St. Louis, 22½ cents per 100 lb.; St. Louis to Dallas, 678 miles, the rate is 79 cents per 100 lb. Pig iron is $7.28 per gross ton from St. Louis to Sherman, 668 miles; Pittsburgh to St. Louis, 621 miles, the rate is $3.30 per gross ton. The rate on coke from St. Louis to Paris is $4 per ton, distance 571 miles. On the same commodity from Connersville, a distance of 960 miles, the rate is only $2.80 per gross ton.

The above are carload rates. Less than carload rates, Cleveland to Sandusky, 190 miles, Nails go at 13½ cents per 100 lb. In Texas, the same distance, the rate is 65 cents. Cincinnati to Connersville, 128 miles, Buggies go at 24 cents per 100 lb. In Texas the same commodity and the same distance, the rate is 79 cents per 100 lb. Does this not look unreasonable and unjust? So through the whole category of classification and distances, by minute comparison, we find

The Same Relative Astonishing Difference in the Rates,

as herein before suggested. If there is any reasonable, satisfactory reason for this apparent discrimination, it should be forthcoming, and it is up to the railroads and transportation companies to render such explanation as will convince us that we are being dealt with, at least, reasonably fair. On the other hand, if they are unable to meet this demand, we should "do business," and seek to secure such a readjustment of these rates to Texas common points as will not deprive Texas merchants of their natural, legal and business rights, and as will not likewise give their competitors any due advantage or preference. This proposition demands and should have the immediate and active attention of this association.

Belated Transportation.

Now, to the question of expedition. There is no doubt but that the transportation companies are unduly careless in this matter. When it requires 32 days for the railroads to transport a carload of freight from Connersville, Ind., to Tyler, 23 days from St. Louis to Tyler and 38 days to get a car of Screen Doors from Malvern, Ark., to Tyler, there is a manifest negligence somewhere; and this negligence, in almost every instance, operates to the detriment of the shipper, since his stock in trade, which is his working capital, is frequently tied up for more than 30 days, cannot be reached and handled during that time by any one save the transportation companies, and they fail and refuse to do it. Why should the shippers be expected to sit quietly by and not protest at such conditions, when there can be no tenable excuse offered therefor? What good business sense is manifested in rolling stock so manipulated that its transportation business earns but $50 per month per car, when if the same car were handled with reasonable expedition it could be made to earn $150 per month?

This matter, as well as the question of rates, demands the immediate attention of this association and should have it. Our association is not now and never has been in the attitude of fighting the transportation companies;

on the other hand, we have, with the minimum amount of complaint, endured much and suffered long. We have come to the period in the business history of Texas when there must be "something doing."

There can be no consistency in the excuse that the higher rate to Texas points is due to a dearth of business, while at the same time they tell you that the reason they cannot get your freight to you more expeditiously is because they are worked beyond their capacity. There can be no consistency in the excuse that the reason they cannot handle your freight more expeditiously is because they are worked beyond their working facilities, while at the same time, with such enormous business, they persistently ravish us with a rate that is to us almost suicidal.

Committee on Heavy Hardware.

The following report of the Committee on Heavy Hardware was rendered by its chairman, D. K. Cason:

Your committee on Heavy Hardware beg to report that during the year no formal complaints of any kind from any member of the association, as to jobbers entering the territory, and taking or offering to take business from consumers or other than regular dealers. This is the one matter that, as we understand, was to be given our attention. We regret to advise, however, that a certain Texas jobber has in the past few days made shipments into a certain locality to a consumer, and we are pleased to advise that this matter will be promptly laid before the Grievance Committee for their attention.

Convention Committees.

The following committees, to act during the convention, were appointed by President Spangler:

NOMINATIONS: R. L. Penick, Joe E. Johnston, T. H. Jones.
FINANCE AND AUDITING: J. H. Hancock, R. W. Harris, H. C. Meyer.
MEMBERSHIP: B. J. Williams, Chas. F. Weiland, Milton Patillo.
RESOLUTIONS: J. R. Cole, J. R. Adams, J. D. Carroll, G. H. Collins.
CONFERENCE: W. N. Jackson, A. M. Lewis, Jno. O. Turner.

Landlord's Lien.

Considerable discussion was had on the question of the landlord's lien, and Messrs. Collins, Schow, Risien, Boydston, Adams, Myers, Cason, Erwin and Jackson addressed the convention, explaining their views of the law. The impression seemed to prevail that the law was reasonably satisfactory. Mr. Cason said:

I believe the law is as nearly right as we can possibly make it. I don't believe it is good judgment to raise a number of legislative questions unless we are thoroughly convinced that we can better the conditions. I think when anybody takes an account he does it with his eyes wide open. It is a religious principle with me to make the men who work for me to pay their debts. I would discharge the best man in my employ if he refused to pay his debts, and they all know it. I am sometimes asked by our jewelry friend if so and so is a good man. I say, "Why, yes; I guess so. What does he want?" The reply will be, "He wants a $250 diamond." I say, "If he has the money to pay for it, all right, but otherwise he should not have it." The thing to do before opening these accounts with a tenant is to go to the landlord and say, "This man wants an advance, and I wish to know whether you will indorse the account." If the landlord does not indorse the account, and if the tenant has not some other way to secure us, then we do not take that account. I follow this as a rule and follow it as far as I can, and if I neglect to follow it I am apt to suffer. I think that if we were a little more careful in our credits we would do a safer and more profitable business. I don't believe we can by any legislation change the landlord system of the State.

President Spangler closed the discussion with the following remarks:

I think you had better get security for your debt if you can. If I am sharper than the other fellow and get my pay, I ought to have it. That is the proposition with me. The next proposition is, the sooner we cut out the man that we do not know anything about in a business way the better it will be for us, and for all other business men. We are only one branch of business men. If a man comes up to me for credit and I ask him if he has any backing, and he says he has no backing, then I say I do not want your trade. The Hardware dealers want to know that they are going to get their money. If I sell something that I am not going to get the money for, then I cannot pay the man that I get the goods from. We must secure ourselves against all of these contingencies, the landlord's lien, and everything. I think the landlord's lien gives a whole lot of chances for collusion, and is calculated to cause trouble to other business men. But, in a majority of instances, if you will go to the landlord at the right time and in the right way, not after the debtor has got away, but at the time you are going to sell goods to the tenant and talk to him in a friendly and straightforward way about the situation, you will generally have the landlord on your side.

How to Present Goods to the Public.

A paper on the subject, "How to Present Our Goods to the Trade," by S. K. Kennerly, was in part as follows:

This is a subject that I have studied for nearly a quarter of a century in Texas, and yet for all these years of experience I feel incapable of handling it with any degree of satisfaction even to myself.

First, I would arrange to have our stores properly filled with goods, no wide empty spaces greeting the eyes of would-be purchasers. To make a favorable impression on the passing public, and to make people pause, gaze, enter and buy, it is necessary to have system in the arrangement of our goods.

Our Show Windows

must be clean and the goods displayed to the best possible advantage. Inside the stores each department should contain the articles for which it was reserved. If a customer enters and calls for a Coffee Pot pilot him to the Tinware department; if a Pocket Knife, the Cutlery showcase, and his selection is soon made. If goods are in their proper places we can be prompt, and quick service means time saved to ourselves and also to our customer, and this gives him a very high regard for our business methods. The best pay customers do not have time to wait while we hunt under the counters or go through all the bins to find a 10-in. Plow Share. Prompt service and quick sales bear the best per cent. of profit.

So Arrange the Show case

that the farmer's boy will yearn for a Pocket Knife or a Fishing Line and Reel, and his daughter be filled with desire to possess a pair of bright, sharp Scissors shown therein. In other words, have the goods speak for themselves and make their own appeal to the people, while you stand ready to help the customer make up his mind if he hesitates.

But first, last and all the time

Be Honest and Truthful

in the presentation of every article for sale. Buy the articles that are suited best to the trade; represent them to be just what they are, no more, no less; sell them for a reasonable and just profit. If we know a Wagon Bed to be made of cottonwood, do not claim it to be poplar; but we can explain that the scarcity of poplar makes the use of the next best, which is cottonwood. This plan will bring to us the respect of the business world and the confidence of our fellow citizen, for no falsifier ever escaped his just punishment. I do not mean by the above to parade or advertise the bad points of our goods, but I do mean that we should never overrate them. And, moreover, we

Should Not Make Too Strong a Guarantee

on any article that we sell. The goods are just what they are, and we can stand by them only as such. If we attempt to do otherwise we lose our profits and the confidence of our customers. Man is a cautious animal, afraid of what he does not see and does not understand. If he buys an article upon which we have put an extra guarantee, and said article proves unworthy, if no other loss, we have lost his confidence, and ever afterward he doubts our veracity and suspects our business integrity.

Leaders.

Another thing, I have never been a strong believer in the theory that a merchant should cut the entire profit out of one branch of his business to boost up the other. Let each article bear its proportionate part of the profit, according to the number of times it is turned over during the year. In all retail businesses special articles are used as leaders. Care must be taken not to spend too much time on these leaders. People know we have them, and let the leaders take care of themselves, while we work on a more profitable branch of our business. Profit is what counts in business, and the persistent efforts to push leaders to the neglect of the more profitable branches will surely find us at inventory time with the balance on the wrong side of the ledger.

Firmness in Pricing.

Further, if an article is worth a dollar, say so with the firmness that will carry conviction to your customer. Do not get frightened and sacrifice the profit if he threatens to go elsewhere for cheaper goods. Admit that cheaper goods can be found for less money. That is, admit that inferior goods for less money can be found, but not cheaper; for no good article was ever made that

was not patterned after on a cheaper scale. It is far better for our customers to say of us, "I paid a tall price for it, but it was worth what I paid," than to say, "I gave but little for it, and it was not worth that little." The holdfast customers are the ones that can buy the best goods.

Never Gauge Your Customer's Pocketbook

by your own, for nearly all of us have a streak of stinginess in our nature, and our streak of stinginess might prompt us to buy a $25 Stove for our wife, when our customer would prefer a $50 Range for his bride. So present the best goods first, and then scale down. Charge a reasonable profit, and leave it to the judgment of the customer, and you will scarcely ever miss a sale.

It is sometimes necessary to sell an article below cost, but it is not always necessary or good judgment to impart this to the customer. Offer it to him at a certain price, and he naturally thinks that price covers some profit for yourself. If you should tell him the price was below cost he would not believe you, or would get suspicious of the goods. People are often suspicious where there is no just cause for suspicion.

When the Ladies Enter the Store

for a box of Tacks, detain them at the showcase and show them the new styles in Percolators, the new designs in Enameled Ware and such other things as are necessary in the kitchen. All good housekeepers recognize the value of such articles, and are glad to buy, and more glad to buy from the man who is thoughtful, courteous and interested in selling his wares.

Make friends with the people, not only for the sake of selling goods, but also for the joy of good fellowship. The goods will sell themselves to those who like and trust us.

Following Mr. Kennerly's address the topic was submitted for discussion by the president, who called attention to one point made by Mr. Kennerly, to the effect that the merchants should commence up and scale down. The president asked "How many of you commence down and scale up." In response, Mr. Jackson spoke as follows:

That is a matter of difference of opinion. In making sales of any kind, I think it depends a good deal on the judgment of the salesman and sizing his customer up. If you told one customer that you wanted to sell his bride a $60 Range, you might scare him so bad that he would not buy anything, while at the same time you might show him a $16 Stove and make a sale at once. You must know your customer. Whenever you take a lady customer in to show her anything, no matter what kind of girl she is or where raised, she likes pretty things and she likes to be shown pretty things that you may know that it is impossible for her to buy; but you flatter her vanity if you show her pretty things, even if they are out of her reach. If it is a lady customer commence on the highest price first; if it is a man customer, show him what he wants, or you could commence on the lowest price first, depending on circumstances.

Getting People Into the Store.

The president then submitted as a topic for discussion the question as to "How are you going to get your man into the store?" He said that one of the points made in Mr. Kennerly's paper was that the merchants should have their windows nicely decorated. He happened to be in a place not long ago and noticed in a merchant's show window which was arranged very attractively, that he had some Clothes Pins exhibited—some three dozen for a quarter, some for 10 cents a dozen straight and some at other prices. He thought it a good plan to make goods talk for themselves by having them displayed in an effective way.

Continuing the discussion, Mr. Meyer made the following remarks:

No man passes by my door but what I give him a hand shake or a salutation, and no one comes into my store but I meet him with a cordial hand shake and a smile. I have different clerks to wait on different trade. There are some people I cannot sell, but some of my clerks can, and I size them up as they come in and turn them over to the right man, and if the clerk fails with him, then I take him. I have been in the trade 30 years, but I cannot always size a man up as to whether he wants a $50 Range or a $15 Stove. I make my store as attractive as I can. If I am tired I sit down at my front door and no man passes there without getting a kind word from me. I believe in attending to the details of the office, but if you will pay more attention to the details in front you will have better success.

Mr. Collins said:

As to display in the store and around about the store, that is essential to the success of any business; so much so, that in fixing up my store as to furniture and fixtures and the means of presenting my stock to the public, I have spent possibly $2500 or $3000. It embraces every department of the business and it has always proved very profitable to me. I have a place for everything in my store, and I have every particular thing in its place, and have it so cared for that time does not affect it one way or the other. I carry Hardware and furniture, and if a lady comes in my store for anything, say furniture, I never price the furniture at the start, but simply carry her around through the stock and watch her very carefully, and I will soon note the character of her taste, and by the time she gets through looking I have about sized up what she wants. I always find out whether she is purchasing to fit up her own home or whether she is buying things for a rented home, and if she is buying for her own permanent home then it is better to show her the best articles. But if it is a temporary home, nine times out of ten it is a mistake to show her the best stuff, at first at least. In other words, it is better to fall in line with her necessities and carry her to the goods that would be practical and sensible for her to buy. For instance, if she starts in by looking at stoves, and if she stops in front of a range and seems interested, that gives you the opportunity to discuss the range; but if she passes by something that she is not able to buy, then you can commence at the bottom and range up. Ordinarily I would start at the top if she was buying supplies for a permanent home.

Do You Advertise, and How?

This was the topic assigned to J. E. Johnston, whose paper was in part as follows:

I believe in judicious advertising, and it is one of the best investments that a merchant can make. An advertisement should be twofold in character. First, and most important, is to establish the reputation of the house. When you have done this you have reached one of the goals of success. There are very few people who like to trade with a firm which has no established reputation. It may be true that bargain prices offered at times to catch the trade will be appealing, but there will always be a suspicion that all is not as represented. I find it much easier to keep a customer than to gain a new one, because we make it a rule to see that our customers are satisfied, though at times we may suffer loss to satisfy them. One displeased customer can do more harm in a week than all the profit you could make out of him in a year.

Confidence Is One of the Chief Assets

of every well established business. Destroy this and your road to fame will be rocky indeed. The local business man cannot afford to make false and misleading statements like some of the pirates in distant States, who sell their goods on misleading representations, "fully guaranteed," subject to the conditions on the other side unknown to us. We must come in contact, face to face, with our customer, while the other fellow is immune and cannot be reached except by an epistle in the hands of Uncle Sam.

I try to make a confidant of all of my customers, and in this way I find out a good many things of interest to me. One of the chief arguments of the catalogue house is that they can save the customer money on any article from a pin cushion to a threshing machine, knowing as they do that when they touch a man's pocketbook they have hit him in a tender place.

In order to make this convincing, they quote prices on some standard articles that will be a clincher. They know if they can make a customer believe that you have been charging him too much that he will not come to see you. If you gain the confidence of your customers, as you should, you will have a chance to contradict this impression, for I truly believe that, with the exception of a few articles which are put out as a bait, there is not a dealer in Texas who cannot

Meet the Prices of These Houses

and make a nice profit, class and grade of goods considered. We are doing it, and in many instances make a better profit than on staple and high grade goods. We do not represent the goods as standard or high grade, for we have to meet these people again, but we can tell them that we believe the goods are worth the money asked for them, and most of our customers buying this class of goods have been pleased, while others have come back and traded them to us for a better grade.

Don't Knock Your Competitor.

Another good way to advertise your business is, don't knock your neighbor. Sell your goods on their merits and not on the demerits of your friend across the street,

or maybe in some other town. Remember you cannot do it all and he also has a right to live, and perhaps a family to feed also. The golden maxim will help you to "render unto Cæsar the things that are Cæsar's, and unto God the things that are God's," and you will find your journey through life much happier.

I advertise through the press and by circular letters. To my regular customers I believe the latter more effective, because I can say to several hundred people at a cost of little postage and a few hours' time what it would take me many days to say to them individually, if I had a chance to do so; besides, with this circular letter you can send a small folder describing some article that you wish to call their attention to.

The catalogue houses realize the value of this kind of advertising, for they do more of it than any other class. They never let up when they get a man's name; they keep after him, and if we, as local dealers, don't do something to counteract it they will land him, and we will not be at the landing either.

The man who believes he can get business without expense or effort is sure to be disappointed, as well as the man who sells his goods without a profit in order to down his competitor. Merit and not prices is the best medium to use in getting trade. The man who buys a thing because it is cheap usually wakes up to the fact that he has bought a cheap article.

Be Honest in All Your Statements.

If you are selling something that you cannot recommend, say so. It is better to tell your customer than to let him find it out and tell you about it.

Courteous treatment is another good way to advertise. See that every one, no matter the color or the nationality, is kindly treated, and don't be afraid to use the little words "thank you," for the man who spends his money with you does so voluntarily, and this much he has a right to expect.

Make it a duty to give any information you can when called upon, for we all have to get our information from each other, and none of us know it all, for many a time a word fitly spoken will prove to be apples of gold in pictures of silver.

Merchants' Relations with Each Other.

M. H. McKoy had for the subject of his paper "Relations of Dealers in the Same Town to One Another." Mr. McKoy's paper was as follows, in part:

We take it for granted that you and the other dealers of your town are all on good terms; that each of you want to make better merchants of yourselves and a better town for all of you, and that you included this in your resolutions for the promising new year, 1908. However, if we are mistaken, if this condition does not exist at your town, if neither of you are doing your duty, if you are day by day neglecting opportunities, if you are having trouble with your competitors, you without cost can help the matter very greatly by looking into the mirror of justice. Quietly sit down and look yourself squarely in the face and ask yourself the question, "Have you done everything possible to make bad matters better?" Make a note of every item you can think of in the past six months that you have done that you should not have done; examine the records and see if you have neglected an opportunity to do your full duty toward your competitors. After all, possibly, the other fellow is not to be watched with so much scrutiny. Turn the eye of criticism upon yourself; watch and see that you do not overstep your rights. Be careful that you do not commit the same or worse deed than the one you are accusing your neighbor of.

We would like to suggest a few things for you to do and not to do, if you would better existing conditions and have easier sailing. Some of these few things we would like to emphasize. Get better acquainted with one another. Be friendly, social, courteous, compromising and businesslike. Visit occasionally, and talk to one another about your affairs. Co-operate with one another, for in this great good can be accomplished in many ways.

Buying Together.

Many times, even in small local shipments, you can buy together even different brands and save half the freight, and especially so when you make up car lots from the same city. When you are temporarily out of some certain article, talk with one another, but be careful and don't let this become burdensome. If your competitor carries some certain line that you do not carry at all, use your efforts to help him sell it. When your customer calls for such goods tell him where he will find them, and hold the trade in your town.

Get the Association Idea,

each of you using your combined efforts in the same direction and for the same ends, and you can and will accomplish many things, whereas as an individual it will be an utter impossibility. If, for any reason, you have a grievance, don't lose a meal or have a nightmare about it, but go like a man to the offender in a gentlemanly businesslike way and cooly and deliberately tell him so, and after a little explanation on the part of both of you you will be better friends, and no doubt have a satisfactory adjustment. Never join your customer in speaking ill or finding fault with another dealer. You will have your hands full keeping the same fellow from talking of you in the same manner; change the conversation. Do not do or say things in public that are calculated to antagonize. Do not say things about other dealers that you would not have them hear, for they will hear it, and the story will have grown by the time it gets to them.

Don't Write Your Advertisement

in a way calculated to throw slurs at some certain dealer, for such is a waste of money, and often times the other fellow gets the benefit. Don't talk evasively or in a half-promising way to a traveling salesman, to keep him from seeing another dealer; if you cannot handle the proposition let the other fellow have it. Don't be overanxious to get the other fellow's customers; sometimes he has some that he wants you to have, and, besides, there are some in your territory that neither of you have; the catalogue houses and other houses have them. Use your efforts in this direction.

Don't Decry the Defects or Faults

of other dealers or their wares to a customer; talk only the merits, the points of advantage, mechanical construction, ease of operation, of your own goods, and you will be busy.

Don't Pry Into Another Dealer's Affairs,

through a traveling salesman, as he is a friend of both of you. Don't bother or talk about the other fellow's unwise credit sales and ultimate losses, but make fewer mistakes yourself.

Don't try to buy the same brands of goods your competitor has in order to have the same thing at a little less price; get something different and better, if possible, that will bring as good a profit and will give your business individuality.

Don't always try to see if you can sell for a little less than the other fellow, but get as good a price, at least, and your profits will look better at the end of the year.

Don't try to make it appear that you are a little bit the biggest merchant by placing a larger order than the other fellow, because the bills are harder to pay. Never get the idea that you are the "whole cheese," for the other dealers and the neighborhood will always accord you the right of being a part of the hoop only.

S. Norvell's Address.

S. Norvell, president of the Norvell-Shapleigh Hardware Company, St. Louis, was present at the convention and made an able and interesting address on the subject of parcel post. He was greeted with prolonged applause at the close and was given a standing vote of thanks. Mr. Norvell's address will be given a place in a later issue.

Other Papers.

Other papers read during the convention were: "Keeping Stock," by H. C. Meyer; "Getting Unsalable Goods Out of Your House," by D. K. Cason, and "The Traveling Salesman and His Duty to His Customer," by Charles Weiland, the publication of which is deferred until later.

Election of Officers.

The officers chosen to direct the affairs of the association during the ensuing year are as follows:

PRESIDENT, O. E. Schow, Clifton.
VICE-PRESIDENT, J. R. Cole, Sherman.
SECRETARY-TREASURER, J. W. McManus, Dallas.

Diabolo?

Parker Brothers, Inc., Salem, Mass., and Fuller Building, New York, whose product is also marketed by Von Lengerke & Detmold, 349 Fifth avenue, New York, to the retail trade, have recently begun the manufacture of the indoor and outdoor game, Diabolo, originally brought out in France, and for which Parker Brothers have exclusive rights in the United States. Diabolo, so named by Fry, the noted English cricketer, is the reconstitution of a similar game practised for ages, it is said, in China, and a century ago in France, in a crude way, the present invention being developed and patented by Gustave Philippart, a French civil engineer. Diabolo is variously alluded to as a spool, ball, bobbin or double top, which spins, accomplished by the union of two cones accurately

balanced and having rubber rims and caps at each end. It is spun, thrown and caught by means of a silken or other cord attached to the ends of two wands or sticks. When expertness is acquired it can be played at long distances by teams of two, four and six players, like tennis, ball, &c., preferably on a tennis court, but requiring under such circumstances more skill and greater athletic effort. Skilful players are said to be able to throw the Diabolo 40 to 45 meters (135 to 150 ft.) in the air, catching it on the cord fastened to the ends of the two handled sticks, as it descends. Practice will soon enable the novice to master the rudiments of the game, but expert play requires months of practice, as in other similar sports, with the advantage that it can be played in modified form indoors any time, the soft rubber caps and light weight

Fig. 1.—Two Views of the Diabolo.

giving its use a wide range. Diabolo is played by placing the spool on the ground, when the player lifts the right wand, thus causing the Diabolo to rise and begin to rotate or spin. In order to maintain the balance of the spool the spinning movement must be accentuated, the player striving to keep the two wands parallel to the axis of the spool. The Diabolo is approximately 2¾ in. long, 2½ in. diameter of rubber at ends, weighs 3 oz. and has in the finer grades celluloid cones, each with a circular hole which causes the Diabolo to hum at a speed of about 3000 revolutions per minute. The cones are connected by a finely adjusted brass center, mechanically accurate to the thousandth of an inch, it is said, which is necessary to insure a proper balance in expert play. The first effort of a player is to learn to rotate the Diabolo, learning

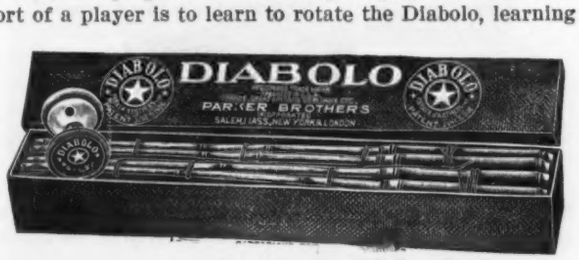


Fig. 2.—The Diabolo Set Complete.

to toss it as expertness is acquired. The rubber ends and light weight permit of a somewhat restricted use in the house, gymnasium, club, armory, &c., out of doors obviously allowing of a wider range of play. The intrinsic value of the game is largely in the dexterity it requires, training of eyes, mind and body and the possibilities of development and manipulation varying with the individual and faculty of origination. While team play affords more excitement and adds zest, an individual can benefit his entire body in a healthful exercise without undue exertion. Full instructions, thoroughly illustrated, accompany each set, of which there are a number of styles, each set being in an individual box, one of which is shown complete in Fig. 2.

TERRELL'S EQUIPMENT COMPANY, Grand Rapids, Mich., manufacturer of steel shelving, bins, trucks and sheet metal specialties, has recently designed two new steel bin racks. One, for light articles, styled No. 1014 R, is 124½ in. long, 60 in. high and 16 in. deep, containing 60 compartments measuring 12 x 15 in. The other, for heavy articles, is styled No. B R—A, and is 84¾ in. long, 80 in. high and 24 in. deep, with bins measuring 25½ x 23¾ in. All racks are shipped knocked down, but are easily assembled. The company also calls attention to its line of lockers.

White Mop Wringer.

The White Mop Wringer Company, Fultonville, N. Y., is putting on the market a new wringer, the feature of which is that, except for the wood handle by which it is operated, it is made entirely of malleable iron, instead of

White Malleable Iron Mop Wringer.

sheet iron, so that it will not rust out. The wringer is constructed on the same general principles as the rest of the White line, and bears the usual warrant and guarantee of satisfaction. It is made in janitors' size, Nos. 7 and 8, the former designed for round and the latter for flat mops.

Boss Step Ladder.

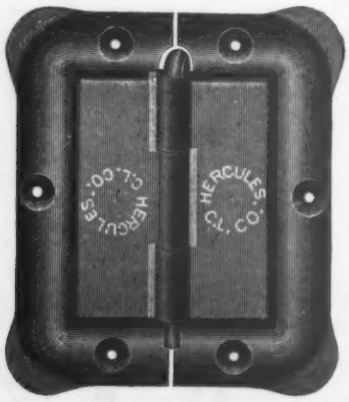
The Boss ladder here shown is a recent addition to the line of R. W. Whitehurst Company, Norfolk, Va. It is made of lowland cypress, which is straight grain,

Boss Step Ladder.

strong and light; pine was found to be a little heavy. Every step is braced, as shown in the cut, preventing side motion, and the legs are also strong and well braced. The ladder is put together with screws, and is offered in natural wood finish in 3, 4, 5, 6, 7, 8, 10 and 12 ft. lengths. Pail rests are furnished on 6 ft. and over.

Hercules Steel Spring Hinge.

The accompanying illustration shows the new model of the Hercules steel spring hinge, as it is now made by Cleveland Lock Company, Cleveland, Ohio, having a much larger flat bearing surface than before. The hinge is referred to as one of the largest on the market, being 3¼ x 3⅜ in. in size, and made on complete new dies. The springs are made of spring steel wire, especially manufactured for the purpose. The hinge is light in weight, will not break from a slight rap with a hammer

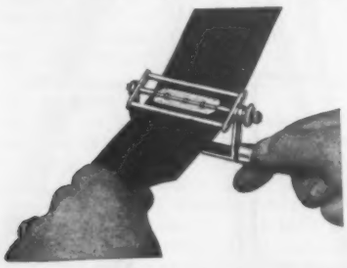


Improved Hercules Steel Spring Hinge.

and can be screwed down on an uneven surface without injury. The finish is said to be especially good, with the surface free from irregularity, lumps, &c. Hinges are packed 1 gross to the case, 1 dozen pairs to the box.

Gaylor Automatic Stropper.

L. B. Gaylor, Allston, Mass., is offering the device here illustrated for sharpening the blades of safety razors. On account of their moderate cost the usual practice with such blades is to discard them after they have been dulled by use. With this stropper it is claimed that they can be easily and quickly sharpened and made as good as new, not only once but many times. This, of course, effects a great economy in the cost of blades. In using the stropper, after the strop leather has been put in proper condition, the blade should be put in position where it is secured by a sliding pin. The leather is then passed through, as shown in the illustration, and the stropper moved quickly up and down, bearing on lightly as in stropping an ordinary razor. After some 20 strokes the blade should be reversed and the process repeated. A blade can be stropped keen, it is said, in



Gaylor Automatic Stropper.

about 2 min. No skill is required so far as operation is concerned, since the action of the stropper is entirely automatic. The stropper is put up in a neat box 7 in. long by 2½ in. wide, which also contains a horse hide strop of best quality. It is also furnished in a smaller box without the strop.

Wagner Flue Stop.

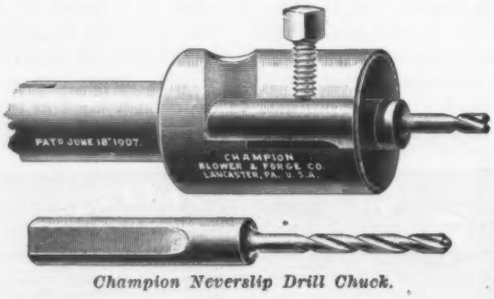
An improved device known as the No. 65 scoop flue stop, herewith illustrated, is a article that has been added to the line of hardware specialties made by the Wagner Mfg. Company, Cedar Falls, Iowa. The circular cover is made of gold lacquered tin ornamentally embossed, and is firmly held in position by a loop wire spring fitted to the back of the cover. An effective feature of the cover provided to guard against the spilling of soot and ashes on removal is the scoop attached to the back, which is inserted in the flue hole. This is made of

Wagner Flue Stop.

galvanized iron, and not only holds deposits of soot, ashes and dust, but also catches creosote, which often leaks out of the flue hole, marring the walls. The stops are not only effective in their operation, but are neatly finished and do not detract from the appearance of the wall. They come packed one dozen in a box.

Champion Neverslip Drill Chuck.

To eliminate trouble in holding the drill bit, the Champion Blower & Forge Company, Lancaster, Pa., is now furnishing the Champion Neverslip drill chuck, here illustrated, on all Champion drills without extra charge.



Champion Neverslip Drill Chuck.

This invention is a square shoulder in the chuck, which permanently meets the flat side milled on drill bit shanks now regularly offered by drill bit manufacturers. It is explained that the square shoulder takes all the strain from the set screw since the square shoulder in the chuck in connection with the flat side shank of the drill bit holds the bit as firmly as the combined strength of the solid metal of both shank and chuck. The chuck is recommended to users of drills on the ground that it enables the drill to do truer work and practically doubles the life of the drill bit.

Aqua Waterproof Leather Belting.

The Shultz Belting Company, St. Louis, Mo., whose New York office is at 111 Chambers street, is featuring its line of Aqua waterproof belting. Although made of leather, the company states that the belt is proved by tests to be absolutely waterproof, steamproof, oilproof and acid fumeproof. It is also asserted that it is not affected by extreme heat or cold or by sudden radical changes in temperature. The fibers are said to be more dense than oak tanned belt, making it exceedingly strong and practically without stretch. It is also said to transmit a maximum of power, as the surface is such that it does not slip, but hugs the pulley, even conforming to slight inequalities that some belting will not touch. It is especially recommended for paper mills, bleacheries, dye houses, laundries, hat factories, automatic screw machines and other drives where the belt is exposed to water, oil, steam, acid fumes, &c.; also for a drive that

crosses from one building to another where it can be used with equally good results without building a waterproof, air tight inclosure for it.

Gaba's Sash Retainer and Anti-Rattler.

The Patterson Tool & Supply Company, Dayton, Ohio, is putting on the market Gaba's patent sash retainer and anti-rattler for car windows, views of which are here given. Fig. 1 is a front view of a window equipped with the device, with sash partly raised; Fig. 2 shows the lock and tooth bar, and Fig. 3 is an enlarged view of sash, tooth bar and lock. The latter indicates how it is applied to the sash, its wedging power and the automatic wedge at the top of the sash, which holds it as firmly as the one at the bottom, making the sash rigid. The device is said to be a positive anti-rattler, dust, water and air proof, holding the sash any hight desired and locking automatically when it is left either up or down. It is held against the outer strip so tight that it will hold the

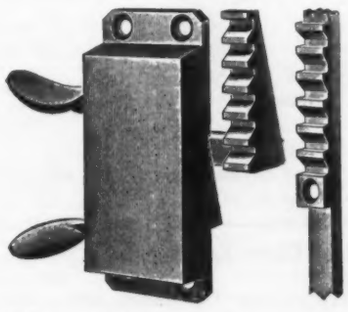


Fig. 2.—Lock and Section of Lock Strip or Ratchet.

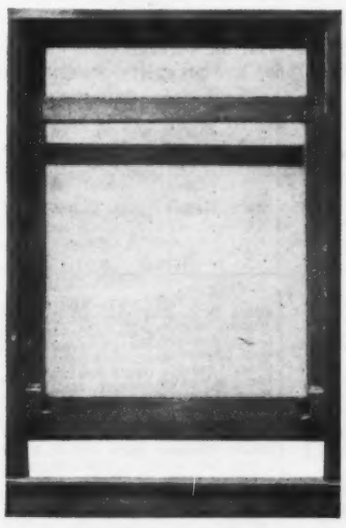


Fig. 1.—Window Partly Raised, Equipped with Gaba's Sash Retainer and Anti-Rattler.

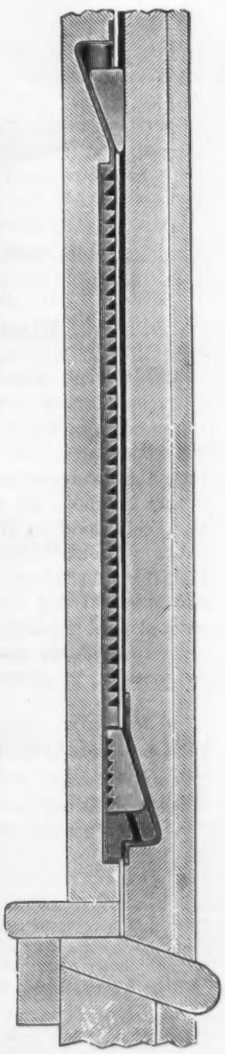


Fig. 3.—Side View (Enlarged) of Sash, Showing How the Lock Strip is Applied.

finest of tissue paper. It does away with the weather strips on the outer side, which are an expense each year. The retainer is so adjusted that it can have 3-16 in. play on all sides if so desired, allowing sash to work easy at all times under any and all exposures of weather. It is impossible to drop the sash, for as soon as the lock is released with the hands the weight of sash takes all labor away from the lock spring. The heavier the sash the better the results obtained from the retainer. The lock can be applied to any car without the expense of new sash or strips. It is very convenient to the traveler, for he can have any desired ventilation, from 1-16 in. to full hight of window. The retainer is a neat fixture, there being no ratchet exposed to mar the beauty of the car or to obstruct the cleaning of it, everything being hid behind the strip except the lock.

Rain-Bow Lawn Sprinkler.

The Turner & Seymour Mfg. Company, Torrington, Conn., is now offering its Rain-Bow lawn sprinkler, mounted on a sled, as shown in the accompanying illustration. In 1907 it was made with a spike only. The

Rain-Bow Lawn Sprinkler.

hight of the Sprinkler is 3⅜ in., and the top has a spread of 2⅛ in. The runners are 6½ in. long. The spreader and top are of thick brass. The sled has rounded corners to prevent its tipping, and is made so that cords may be attached to draw it about. There is said to be nothing about it to rust or wear out. Under high pressure it throws a spray covering an area of 35 to 40 ft. in diameter. It will also work well under low pressure and, the company claims, will not flood the lawn or wash the earth from the roots of the grass.

Unique Fruit and Vegetable Pitter.

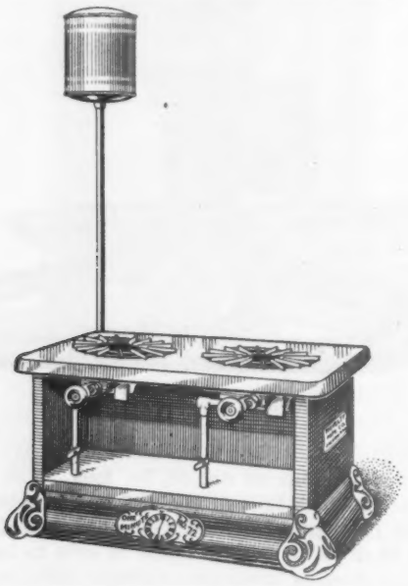
The Mosteller Mfg. Company, Chicago, offers the Unique fruit and vegetable pitter illustrated herewith. It is made of non-corrosive metal, and all parts are said to be strong and easily accessible for cleaning. In use the point of the Pitter is placed below the eye or pit to be removed and inserted the required depth; then the

Unique Fruit and Vegetable Pitter.

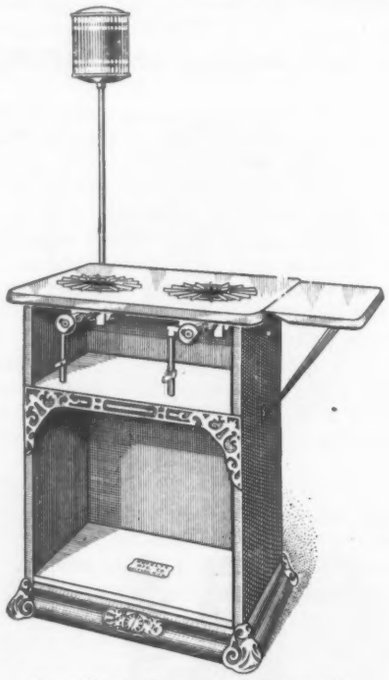
lever is pressed down with the thumb. After removing the pit the thumb slips off the lever and the reaction of the knife will discharge the contents. It is explained that pineapples should be peeled before the pits are removed. The utensil is recommended as a cheap and practical article for hotel, restaurant, or household use, in pitting pineapples, removing specks from potatoes, apples and other fruits and vegetables, and for testing cheese and other products.

One Minute Stove.

The Novelty Mfg. Company, Jackson, Mich., maker of an extensive line of oil stoves, has perfected and is now putting on the market the One Minute stove, which derives its name from the fact that it can be lighted and the flame brought to a full head in 1 min. The stove is the result of exhaustive experiments to mix air with gas generated from kerosene oil to produce the greatest amount of heat at the lowest cost. It burns a blue flame, but eliminates wicks, asbestos rings, perforated rings, chimneys, &c. It is said to be absolutely odorless. The flame is controlled by a needle valve similar to that used in gasoline stoves. When the valve is open the gas is permitted to enter the combustion chamber directly under the burner cap, together with a sufficient amount of air to create perfect combustion. Denatured alcohol is used in lighting the burner, and it is estimated that 1 gal. is sufficient to operate the burner for one year. This is commended as being low in price, obtainable at every point in the United States, and free from odor. The stoves are furnished in five styles, three juniors and two seniors, each illustrated herewith in the two-burner size. The No. 72 stove is 12 in. high and has a 15 x 22 in. top. Its weight is 24 lb.; shipping weight, crated, 33 lb. The No. 74 stove is 30 in. high and has a 18 x 25 in. top, with 7 x 15 in. side shelf. Its weight is 37 lb.; shipping weight, crated, 60 lb.



One Minute Stove, Junior, No. 72.



One Minute Stove, Senior, No. 74.

Dixon's Gem Eraser.

The Joseph Dixon Crucible Company, Jersey City, N. J., is offering a new erasive rubber styled the Gem. It has been perfected as a result of much experimenting and experience, and is made of the best material. Although pink in color, it does not leave a trace of color on any surface. It is described as a soft, flexible eraser that feels good in the hand and quickly removes pencil marks without injury to the writing surface. Its texture is pliable and velvety, and there are no gritty constituents which would dig into the paper; before doing so it is claimed that the rubber itself will yield. It is especially recommended for draftsmen, and is particularly adapted for cleaning up drawings.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal.
Linseed, State and Western, raw	.41 @42
City, Boiled	.45 @46
City, Raw	.44 @..
Raw, Calcutta, in bbls	.70 @..
Lard, Prime, Winter	.68 @72
Extra No. 1	.51 @53
No. 1	.49 @52
Cotton-seed, Crude, f.o.b. mill	.31 @31½
Summer Yellow, prime	.40½@40¾
Summer White	.42 @43½
Yellow Winter	.45 @45½
Sperm, Crude	.59 @60
Natural Winter	.72 @74
Bleached Winter	.75 @76
Bleached Winter, Extra	@..
Tallow, Prime	.59 @60
Whale, Crude	.35 @36
Natural Winter	.46 @48
Bleached Winter	.49 @51
Extra Bleached Winter	.52 @54
Menhaden, Brown, Strained	.41 @42
Light Strained	.41 @42
Northern	@..
Southern	.37 @..

	₱ lb
Cocoanut, Ceylon	6¾@ 7
Cochin	8 @ 8¼
Cod, Domestic, Prime	.42 @44
Newfoundland	.44 @46
Red, Elaine	.40 @42
Saponified	5¾@..
Olive, Yellow	.65 @70
Neatsfoot, Prime	.55 @58
Palm, Lagos	6.05@6.15

Mineral Oils—

	₱ gal.
Black, 29 gravity, 25@30 cold test	.13 @13½
29 gravity, 15 cold test	.13½@14
Summer	.12½@13
Cylinder, light filtered	.20½@21
Dark, filtered	.18 @19
Paraffine, 903-907 sp. gravity	.14½@15
903 sp. gravity	.13½@14
883 sp. gravity	.11 @11½
Red	.13½@14

Miscellaneous—

Barytes:		
White, Foreign	₱ ton	$18.50@20.50
Amer. floated	₱ ton	19.00@20.00
Off color	₱ ton	13.00@16.50
Chalk, in bulk	₱ ton	3.00@ 3.40
China Clay, Imported	₱ ton	11.50@18.00
Cobalt, Oxide	₱ 100 lb	2.50@ 2.60
Whiting, Commercial	₱ 100 lb	.42@ .52
Gilders	₱ 100 lb	.55@ .60
Ex. Gilders	₱ 100 lb	.60@ .65

Putty, Commercial—₱ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—₱ gal.

In Oil bbls	.54 @54½
In machine bbls	.54½@55

Glue—

	₱ lb
Cabinet	.12 @15
Common Bone	7½@ 9
Extra White	.18 @24
Fish, liquid, 50 gal. bbls., per gallon	.60 @1.20
Foot Stock, White	.12 @14
Foot Stock, Brown	.9 @11
German Common Hide	.10 @12
German Hide	.12 @18
French	.10 @40
Irish	.13 @16
Low Grade	.10 @12
Medium White	.14 @17

Gum Shellac—

	₱ lb
Bleached, Commercial	.25 @26
Bone Dry	.31 @32
Button	.40 @50
Diamond I	.47 @48
Fine Orange	.30 @35
A. C. Garnet	.30 @31
G. A. L.	.22 @23
Kala Button	.20 @22
D. C.	.49 @50
Octagon B.	.38 @40
T. N.	.25 @26
V. S. O.	.47 @48

Colors in Oil—

	₱ lb
Black, Lampblack	.12 @14
Blue, Chinese	.36 @46
Blue, Prussian	.32 @36
Blue, Ultramarine	.13 @16
Brown, Vandyke	.11 @14
Green, Chrome	.12 @16
Green, Paris	@24
Sienna, Raw	.12 @15
Sienna, Burnt	.12 @15
Umber, Raw	.11 @14
Umber, Burnt	.11 @14

White Lead, Zinc, &c.—

	₱ lb
Lead, English white, in Oil	10⅛@10¾
Lead, American White:	
Lots of 500 lb or over, in Oil	@ 6¾
Lots less than 500 lb, in Oil	@ 7⅛
Lead, White, in oil, 25 lb tin pails	@ 7⅛
Lead, White, in oil, 12½ lb tin pails	@ 7⅝
Lead, White, in oil, 1 to 5 lb assorted tins	@ 8⅜

Lead, American. Terms: On lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice.

	₱ lb
Zinc, American, dry	5⅛@ 5⅝
Zinc, French:	
Antwerp, Red Seal, dry	8¼
Antwerp, Green Seal, dry	10½
Paris, Red Seal, dry	8¾
Paris, Green Seal, dry	10¾
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	12⅞@13⅜
Lots of less than 1 ton	13¼@13⅝
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11⅝@11⅞
Lots of less than 1 ton	11⅝@12⅛

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1⅞; 25 bbls., 2⅜; 50 bbls., 4⅞.

Dry Colors—

	₱ lb
Black, Carbon	.6¼@10
Black Drop, American	.3½@ 8
Black Drop, English	.5 @15
Black, Ivory	.16 @20
Lamp, commercial	.4 @ 6
Blue, Celestial	.4 @ 6
Blue, Chinese	.31 @33
Blue, Prussian	.29 @31
Blue, Ultramarine	.3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.25
Green, Chrome, ordinary	.3½@ 5
Green, Chrome, pure	.17 @25
Lead, Red, bbls., ½ bbls., kegs.	@ 6¾
Litharge, bbls., ½ bbls., kegs.	@ 6¾
Ocher, American	₱ ton $8.50@16.00
American Golden	2½@ 3¼
French	1¼@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	.10 @11
French	.11¾@12
German	.10 @11
American	.8½@ 8¾
Red, Indian, English	.4½@ 6
American	.3 @ 3¼
Red, Turkey, English	.4 @10
Red, Tuscan, English	.7 @10
Red, Venetian, Amer.	₱ 100 lb $0.50@1.25
English	₱ 100 lb $1.15@1.60
Sienna, Italian, Burnt and Powdered	.3 @ 9
Italian, Raw, Powdered	.3 @ 7
American, Raw	.1½@ 2
American Burnt and Pow'd.	.1½@ 2
Talc, French	₱ ton $18.00@25.00
American	₱ ton 15.00@25.00
Terra Alba, French	₱ 100 lb .90@ 1.00
English	₱ 100 lb .80@ 1.00
American	₱ 100 lb, No. 1, .75@ .80
American	₱ 100 lb, No. 2, .60@ .65
Umber, T'key, Bnt. & Pow.	.2¾@ 3
Turkey, Raw and Powdered	.2¾@ 3
Burnt, American	.1½@ 2
Raw, American	.1½@ 2
Yellow Chrome, Pure	.13 @15
Vermilion, American Lead	.7 @25
Quicksilver, bulk	.65 @..
Quicksilver, bags	@66
English, Imported	.65 @70
Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Columbian and Domestic....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent....33%
Taplin's Perfection....33%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs ....$2.00@$3.00

Anvils—American—
Eagle Anvils....℔ lb @8¼ ¢
Hay-Budden, Wrought....9¼@9¾ ¢
Trenton ....℔ lb 9¼@9¾ ¢

Imported—
Swedish Solid Steel Sisco, Superior, ℔ lb....10¢@10½ ¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11¼ ¢.

Anvil, Vise and Drill—
Millers Falls Co., $18.00....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co....10%

Augers and Bits—
Com. Double Spur....75@80%
Jennings' Patn., Bright, 65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers....70%
Car Bits, 12-in. twist....40&10%
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....30%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Wright's Jennings' Bits....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18....60&10%
Ford's, Clark's Pattern....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$6.50@7.00
Ames ....25&10%
Universal 20%

Ship Augers and Bits—
Ship Augers....40&10%
Ford's ....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' ....33⅓&7½%
Snell's 40%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled ....gro. $2.75@3.00
Unhdld, Shildered...gro.63@66¢
Unhandled, Patent..gro.68@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdld, Shildered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Booket..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality....$4.75@5.00
Second Quality....$4.25@4.50
Double Bit, base weights:
First Quality....$7.00@7.50
Second Quality....$6.50@6.75

Axle Grease—
See *Grease, Axle*

Axles—Iron or Steel
Concord, Loose Collar..4½@5 ¢
Concord, Solid Collar...4¾@5¼ ¢
No. 1 Common, Loose....3¾@4¼ ¢
No. 1½ Com., New Style..4½@5 ¢
No. 2 Solid Collar....4½@5 ¢
Half Patent:
Nos. 7, 8, 11 and 12..65@65&10%
Nos. 13 to 14....65@65&10%
Nos. 15 to 18....70@70&10%
Nos. 19 to 22....70@70&10%

Boxes, Axle—
Common and Concord, not turned lb., 5@6¢
Common and Concord, turned. lb., 6@7¢
Half Patent....lb., 9½@10¢

Bait—Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

Balances—Sash—
Caldwell new list....50%
Pullman ....50&10@60%

Spring—
Spring Balances....50&10@60%
Chatillon's:
Light Spg Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—
Steel Crowbars, 10 to 40 lb.... per lb., —@2½@2¾ ¢

Towel—
No. 10 Ideal, Nickel Plate..℔ gro. $8.80

Beams, Scale—
Scale Beams....40%
Chattillon's No. 1....30%
Chattillon's No. 2....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned....℔ doz. $1.50

Beaters, Egg—
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $5.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover....$6.50

Bellows—
Blacksmith, Standard List..
Split Leather....60&10@65%
Grain Leather....50@50&10%

Hand—
Inch..	6	7	8	9	10
Doz..	$5.00	5.50	6.00	6.50	7.50

Net Prices.

Molders—
Inch..	10	12	14	16
Doz..	$7.50	9.00	12.00	15.00

Net Prices.

Bells—Cow—
Ordinary Goods...75@75&10@75&10&5%
High grade....70&10@75%
Jersey ....75&10%
Texas Star....50%

Door—
Home, R. & E. Mfg. Co.'s....55&10%

Hand—
Polished, Brass....50&10@60%
White Metal....50&10@50&10&5%
Nickel Plated....50&5%
Swiss ....50&5%
Cone's Globe Hand Bells....33⅓@35%

Miscellaneous—
Farm Bells....lb., 2¼@2½¢
Church and School....60@60&5%

Belting—Leather—
Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard ....70&5%
Light Standard....75%
Cut Leather Lacing....40&10%
Leather Lacing Sides, per sq. ft. 2½¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard ....70@70&5%
Extra ....60&5@60&10%
High Grade....50&5@50&10%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes....50%
Tubes 40%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—
Common Wooden....75@75&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—
Paper and Wood Lined....40%
Embossed 50%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co....33⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread):
⅜ × 6 and smaller..70&5@—%
Larger and longer....65@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends....65&5@—%
Machine (Cut Thread):
⅜ × 4 and smaller..70&7½@—%
Larger and longer...65&5@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch	3	4	5	6	8
Per doz.	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:
Inch	6	8	10
Per doz.	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:
Inch....	6	8	10
Per doz.	$1.00	1.40	1.85

Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch....	6	8	10
Per doz.	$0.75	.95	1.25

Wrought Barrel Japd..80@80&10%
Barrel Bronzed....60&10%
Spring ....70&10@70&10&10%
Shutter ....50&5@50&10&5%
Square Neck....75@75&10%
Square ....70&10@10%
Ives' Patent Door....58%
Ives' Wrought Metal....45%

Expansion—
Richards Mfg. Co....50&10%
Steward & Romaine Mfg. Co.
Style No. 13, Double....55%
Style No. 1, Single....55%
Style No. 100, Dbl. Jaw, Single..50%
Lag Screw....66⅔%

Plow and Stove—
Plow ....65&5@—%
Stove ....85@85&5%

Tire—
Common Iron....80%
Norway Iron....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct., '84....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

Borers, Bung—
Borers Bung, Ring, with Handle:
Inch.....	1¼	1½	1¾	2
Per doz....	$4.80	5.60	6.40	8.00
Inch	2¼		2½	
Per doz.....	$8.65		11.50	

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme ....15&10%
Perfection 40%
Seavey 45%

Braces—
Common Ball, American....$1.50
Barber's ....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 70 to 120, 81 to 123, 207 to 213 ....60%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat....50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat..60&10%

Brackets—
Wrought Steel....70&10@75&10%
Bradley Metal Clasp..80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket ....℔ doz. $1.50

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

Buckets, Galvanized—
M'f'gr's list, price per gross.

	Quart..	10	12	14	
Water, Reg...	25.35	28.00	32.00		1045%
Water, Hvy...	45.35	48.00	52.00		
Fire, Rd. Btm.	32.00	34.65	38.65		
Well	37.35	41.35	45.35		

Bull Rings—See *Rings, Bull*

Butts—Brass—
Wrought, High List, Oct. 26, '06..55%
Cast Brass, Tiebout's....40%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint....70&10@75%
Loose Pin....70&10@75%
Mayer's Hinges....70@70&5
Parliament Butts....70@70&5

Wrought Steel—
Bright.
Light Narrow, Light Reversible ....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c....70%
Back Flaps, Table Chest..65% Japanned.
Light Narrow, Loose Pin. 40&5%
Light Narrow, Ball Tip..60%
Broad ....40&5%
Steeple Tipped....70%
Ball Tipped....70%

Extra Loose Pin

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze; Series 700, 800..30%
Hendryx Enameled..... 35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per lb., 4¼@4¾¢
Sharp, 1 prong, per lb., 4¾@5¼¢
Burke's, Blunt, 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B. ..... 58@55¢
G. D. ..... *per M* 34@35¢
F. L. ..... *per M* 40@42¢
G. B. ..... *per M* 48@50¢
Musket ..... *per M* 62@63¢

Primers—

Berdan Primers, $2 per M.. 20&5%
Primer Shells and Bullets.. 15&10%
All other primers per M. $1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
32 C. F., $5.50..... 10&5%
38 C. F., $7.00..... 10&5%
22 cal. Rim, $1.50..... 10&5%
32 cal. Rim, $2.75..... 10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball.... $1.40
Central Fire..... 35%
Target and Sporting Rifle.. 15&5%
Primed Shells and Bullets. 15&10%
Rim Fire, Sporting..... 50%
Rim Fire, Military..... 15&5%

Casters—

Bed ..... 65&10%
Plate ..... 60&5%
Philadelphia ..... 70&10%
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem..... 20%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list..40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	5-16	7-16	½	9-16
$8.65	6.05	4.90	4.25	4.15	4.10
⅝	¾	⅞ to 1	1⅛ to 1¼ inch.		
$4.05	3.95	3.90	4.00		

In cask lots, deduct 25c.
German Coil..... 60@60&5%
German Pattern Coil:
6-9 to 1..... 70&5@70&10%
2 and 3.. 60&10&10@60&10&10&5%
4, 5 and 6.... 50&10@50&10&5%

Halter—

Halter Chains..... 60@60&5%
German Pattern Halter Chains, list July 24, '07..... 60&10&5%
Covert Mfg. Co.
Halter ..... 35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring. $28.00
6½—6-2, Straight, with ring. $29.00
6½—8-2, Straight, with ring. $32.00
6½—10-2, Str'ght, with ring. $37.00
NOTE.—Add 2c per pair for Hooks Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c.. 60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron ..... 60&10%
Brass 60%
Safety and Plumbers' Chain, 60&10%
Gal. Pump Chain.... lb., 4½@5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain..... 50%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft..... $1.25@3.00
Sash Ribbon Attachments, per set.8¢

Chalk—(From Jobbers.)

Carpenters' Blue....gro., 50@55¢
Carpenters' Red.....gro., 45@50¢
Carpenters' White...gro., 40@45¢

Checks, Door—

Bardsley's 45%
Pullman, per gro..... $54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 50%
Youths' Chests, with Tools..... 25½
Gentlemen's Chests, with Tools..25%
Farmers', Carpenters,' etc., Chests, with Tools..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

Chisels—

Socket Framing and Firmer

Standard List..... 80%
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White Co..... 30@30&5%

Tanged—

Tanged Firmers..... 30&5@35%
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

Cold—

lb.
Cold Chisels, good quality.. 13@15¢
Cold Chisels, fair quality.. 11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat., each $8.00..... 35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks..... 35%
Universal, Reversible Jaws..... 35%
Combination, Reversible Jaws..... 35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive..... 40%
Planer Chucks..... 30%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combination, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal, No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

Clamps—

Adjustable, Hammers'..... 20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers, Hammers'..... 40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each..... $6.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

Clips, Axle—

Regular Styles, list July 1, '05, 80&80&10%

Cloth and Netting, Wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c. ..... 70@—%
Compression Bibbs.. 60&10@—%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods..... 70&10@75%
Wm. Schollhorn Co.:
Excelsior Dividers..... 60%
Lodi Dividers..... 70&10%

Conductor Pipe,—

L. C. L. to Dealers:

	Galvanized		
Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*	
Eastern:			
70%	50&17½%	45%	
Central:			
70&5%	55%	45%	
Western and Southern:			
65&10%	50&2½%	40&5%	
So. Western			
65&5%	45&5%	40&2½%	

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled..... 10%
Agate Lined..... 10%

Coopers' Tools—

See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 24@27¢; lighter than 3 lb. to pair..... 26@29¢

Cord—Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 23¢; No. 7, 23½¢; No. 6, 24½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18.. 37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb., 11@11½¢
Cotton Sash Cord, Tw'ted. 18@20¢
Patent Russia.....lb... 20¢
Cable Laid Russia.....lb... 21¢
India Hemp, Br'd'd.....lb... 21¢
India Hemp, Twisted..lb. 13@14¢
Patent India, Twisted...lb... 17¢
Pearl Braided, cotton, No. 6, ℔ lb, 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½¢; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10..... ℔ lb 23 ¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord..... 50¢ } 15%
Massachusetts, White....℔ lb 40¢
Massachusetts, Drab.....℔ lb 45¢
Phoenix, White, Nos. 8 to 12, 27¢;
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906..... 90@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 85&10%

Cradles—

Grain ..... 40&12½%

Crayons—

White Round Crayons, Cases, 100 gro., $6.50@7.50 at factory, but lower prices made by jobbers
Zelnicker's Lumber, ℔ gro. White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $5.50; Light $5.00

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden..... 50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor .....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60%
B. Mfg. Co..... 40%
Woodward 50%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

25@25&7½%
No. 202, $1.50..... 40&7½%
P., S. & W. Co.:
Dixon's .....℔ doz. 33⅓%

Nos...	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal ..... 40@40&5%
Hales ..... 60&10&5%
Little Giant.....℔ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

New Triumph No. 605, ℔ doz. $24.00, 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 ..... 45&10&10%

	$15.00	$18.00

Enterprise Beef Shavers..... 25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

Tobacco—

All Iron, Cheap..doz. $4.25@$4.50
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

Diggers, Post Hole, &c.—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz..... $10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00..... 40%

Dividers—See *Compasses.*

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling Machines ..... $1.50@$1.75
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills..33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved 40%
Ratchet, No. 012..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W. ..... 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00..... 33⅓%

Twist Drills—

Bit Stock..... 60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz. 45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in. ℔ 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 50%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized*		
Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*	
Eastern:			
75&5%	60&10%	45%	
Central:			
75&10%	65%	45%	
Western and Southern:			
75%	60&5%	40&5%	
So. Western:			
70&10%	55&7½%	42½%	

Terms.—2% for cash. Factory shipments generally delivered.
Note.—Lower prices are made in some sections.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I. Standard Gauge.... 85@85&10%
No. 26..... 50%
No. 24..... 35%
No. 22..... 10%
Copper ..... 50&10%

Elbows, Stove Pipe—

Edwards, Standard Blue.....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, one piece.....40&10%

Emery, Turkish—

	½ to 4:	5 to 220:	Flour.
Kegs .....lb.	5 ¢	5½ ¢	5½¢
½ Kegs.....lb.	5½ ¢	5¾ ¢	5¾ ¢
¼ Kegs.....lb.	5½¢	6 ¢	6 ¢
10-lb. cans, 10 in case....	6½¢	7 ¢	6 ¢
10-lb. cans, less than 10.....	10 ¢	10 ¢	8 ¢
Less quantity..	10 ¢	10 ¢	8 ¢

NOTE.—In lots 1 to 5 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's ..... 50&10%
Walling's ..... 40&10%
Upson's Patent..... 40%

Cord and Weight—
Ives and Titan..... 33⅓%

Corrugated—
Acme Corrugated Fasteners..... 70%

Faucets—
Cork Lined..... 50&10@60%
Metallic Key, Leather Lined, bbl. list..... 70%
Red Cedar..... 40&5@40&10&5%
Petroleum ..... 70&10@75%
B. & L. B. Co.:
Metal Key..... 60&10%
Star 60%
West Lock..... 50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key..... 50%
John Sommer's Victor Mtl. Key. 50&10%
John Sommer's Duplex Metal Key.. 60%
John Sommer's Diamond Lock..... 40%
John Sommer's I.X.L. Cork Lined... 50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined. 60%
John Sommer's O. K. Cork Lined... 50%
John Sommer's No Brand, Cedar.... 50%
John Sommer's Perfection, Cedar.... 40%
Self Measuring:
Enterprise, ℔ doz. $36.00..... 40&10%
Lane's, ℔ doz. $36.00..... 40&10%
National Measuring, ℔ doz. $36. 40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands..... 70&10@75&10%
Standard Brands..... 75&10@80%
Lower Grade... 75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97..... 33 1-3@40%

Fixtures, Fire Door—
Allith Underwriters' Approved..... 50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 ..... $3.75
Fusible Links, No. 96..... 60%
Expansion Bolts, No. 107..... 60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.60*	*3.85*	*4.15*	*4.65*

P., S. & W. Co..... 25%
Reading Hardware Co..... 60%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato..... 60&10%
Victor, Hay..... 60&15&2½%
Victor, Manure..... 66⅔%
Victor, Header..... 65%
Champion, Hay..... 66⅔%
Champion, Header..... 65%
Champion, Manure..... 60&15&2½%
Columbia, Hay..... 60&20%
Columbia, Manure..... 70%
Columbia, Spading..... 70&12½%
Hawkeye Wood Barley..... 40%
W. & C. Potato Digger..... 60&10%
Acme Hay..... 60&20%
Acme Manure, 4 tine..... 60&10&5%
Dakota Header..... 60&20%
Jackson Steel Barley..... 60&20%
Kansas Header..... 65%
W. & C. Favorite Wood Barley..... 40%
Plated.—See Spoons.

Frames— Wood Saw—
White, S'g't Bar, per doz. 75@80¢
Red, S'g't Bar, per doz.. $1.00@1.25
Red, Dbl. Brace, per doz. $1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp ..... $2.75 } 10&2½%
Cotton ..... 3.20 }
Waterproof Sgl. Taped.. 3.65 }
Waterproof Dbl. Taped.. 4.40 }
Waterproof Tpl. Taped.. 5.15 }

Gates, Molasses and Oil—
Stebbins' Pattern..... 75@80%

Gauges—
Marking, Mortise, &c. 50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c..... 50&50&10%
Disston's Marking, Mortise, &c.. 67½%
Wire, Brown & Sharpe's..... 33⅓%
Wire, Morse's..... 25%
Wire, P., S. & W. Co..... 33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co..... 65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush.. 25&10@50%
Elwell's 40%

Grease, Axle—
Common Grade....gro. $6.00@6.50
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb. $1.20; 2 lb..... $2.00
Helmet Hard Oil..... 25%

Griddles, Soapstone—
Pike Mfg. Co..... 33⅓@33⅓&10%

Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 ..... 30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50..... 30%
Alundum Disc Grinders, each, $2.50 ..... 30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00..... 33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted..... 40%

Grips, Nipple—
Perfect Nipple Grips..... 40&10&2%

Halters and Ties—
Cow Ties..... 60&5@60&10%
Covert Mfg. Co.:
Web ..... 30&2%
Jute Rope..... 35%
Sisal Rope..... 20%
Cotton Rope..... 45%
Hemp Rope..... 45%
Oneida Community:
Am. Coil and Halters..... 40@40&5%
Am. Cow Ties..... 45@60%
Niagara Coil and Halters.. 45@50&5%
Niagara Cow Ties.... 45&5@60&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'... 55&10&55&10&5%
Heller's Farriers'..... 40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel..... 50%
Farriers' ..... 40&10&5%
Riveting 50%
Machinists', revised list..... 66⅔&5%
Blacksmiths' ..... 50&5%
Fayette R. Plumb:
A. E. Nail..... 40&2½@40&12½%
Eng. and B. S. Hand. 50&10&5@60&5%
Machinists' Hammers..... 60@60&10%
Rivet and Tinners'. 40&7½@40&12½&5%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢... 80&10%
3 to 5 lb., per lb., 40¢..... 80&10%
Over 5 lb., per lb., 30¢.....
Over 5 lb., per lb., 30¢. 80&10&10%

Handles—
Agricultural Tool Handles
Axe, Pick, &c.... 60&10@60&10&5%
Hoe, Rake, &c..... 40%
Fork, Shovel, Spade, &c.:
Long Handles..... 40%
D Handles..... 40%

Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $3.00@$3.50
Brad Awl.....gro. $1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory..... $2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory.... $1.60@$1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished... 65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted. 75¢
Fore, doz. 45¢; Fore, Bolted. 90¢
Chapin-Stephens Co.:
Carving Tool..... 30@30&10%
Chisel ..... 60@60&10%
File and Awl..... 60@60&10%
Saw and Plane..... 30@30&10%
Screw Driver..... 30@30&10%
Millers Falls Adj. and Ratchet Auger Handles ..... 15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 in., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80. } 30%
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00. } 30%
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80. } 30%
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80. } 30%
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80. } 30%
Hatchet, ℔ doz., 12 to 14 in., $2.00. } 30%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door..... 50%
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin..... 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door..... 50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle..... 60&2½%
Roller Bearing..... 70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.. 60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy. No. 22, $18.00..... 60&10%
Bull Dog, $24.00..... 70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion $2.25
Barn Door, Standard..... 60&10%
Hinged ..... net $6.08
Covered ..... 60&5%
Special ..... 70&5%
Lawrence Bros.:
Advance ..... 55&10%
Cleveland ..... 70&7½%
Clipper, No. 75..... 60%
Crown ..... 55&10%
Cyclone, No. 40..... net $6.50
Tandem, No. 50..... net $7.50
New York..... 55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2. 70%
Anti-Friction 60%
Hinged Hangers, King Charm. 60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3.. $2.25
Roller B'r'g St'l Track No. 12. $2.20
Roller B'r'g St'l Track No. 13. $2.50
Roller M'f'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19.. 50&10%
Adjustable Track Tandem Trolley Track No. 16..... 50&10%
Seal, Steel Track No. 8..... $2.25
Auto Adj. Track No. 22.—50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150..... $2.50
Safety Underwriters F. D. No. 101 ..... 50%
Tandem No. 14..2½ and 3 60&10%
Palace, Adjustable Track No. 122 ..... 50&5%
Royal, Adjustable Track No. 122 ..... 50&10%
Ives' Wood Track No. 1..... $2.25
Trolley B. D. No. 20..... 50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28..... $1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2. 70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3..... 60%
Hinged Tandem No. 48.... 60&5%
Folding Door B. B. Swivel No. 135 ..... 40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing. 50&15&10&5%
Myers' Stayon Hangers..... 60%

Extra 10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.50; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro. $8.00; Garment Hanger Rods, Round Nickeled, per gro., $10.50; Garment Hanger Loops, Round Nickeled, per gro..... $10.50
Victor Folding..... ℔ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—
Lane Bros. Co..... 30%

Hasps—
Griffin's Security Hasp..... 50&10%
McKinney's Perfect Hasp, ℔ doz..60%

Hatchets—
Regular list, first qual..40&2½&—
Second quality..... 50&5&—

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50..... 25%
Clark Coal, ℔ doz., $0.75..... 20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Acme, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50..... 10%
Charles Parker Co..... 70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00..... 20%
Reading's Gravity..... 60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter..... 75&5%
Acme, Lull & Porter..... 75%
Queen City Reversible..... 75%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5..... 75&5%
Tip Pat'n, No. 1..... 75&10%
No. 3..... 75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5..... 70&10&5%
Shepard's Double Locking..... 75%
Champion Gravity Locking..... 75&5%
Pioneer ..... 75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2..... 60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L'f'chs.	*$2.00*	*2.70*	*5.00*
Hinges only	*1.40*	*2.05*	*3.80*
Latches only	*.70*	*.70*	*.35*

New England:
With Latch.....doz. ....@$2.00
Without Latch...doz. ....@$1.60
Reversible Self-Closing:
With Latch.....doz. ....@$1.75
Without Latch...doz. ....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3..... 70%

Pivot Hinges—
Bommer Bros. Pivot..... 40%
Lawson Mfg. Co. Matchless..... 50%

Spring Hinges—
Holdback, Cast Iron... $6.75@$7.00
Non-Holdback, Cast Iron $6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges..... 40%
Bardsley's Patent Checking. 33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor.. 40%
Bommer Spring Hinges..... 40%
No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges..... 25%
Triple End Spring Hinges.... 50%
Chicago (Ball Bearing) Floor.. 50%
Garden City Engine House.... 25%
Keene's Saloon Door..... 25%
Columbian Hardware Co.:
Acme, Wrought Steel..... 30%
Acme, Brass..... 25%
American 30%
Columbia, ℔ gr., No. 14, $9.00; No. 18, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Columbian Hinges..... 60&10%
Gem, new list..... 30%
Clover Leaf..... ℔ gr. $12.00
Oxford, new list..... 30%
Floor Spring Hinges..... 65&10%
Lawson Mfg. Co., Matchless.... 30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door..... ℔ gr. $9.00
Chief Ball Bearing Floor Hinge 50%
Ball Bearing Door..... 25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr..... $9.00
Superior Spring Hinge Co.:
Superior Floor Hinges..... 33⅓%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges.. 50&10% } Extra 10&7½%.
Heavy Strap Hinges.. 60&5% }
Light T Hinges..... 50% }
Heavy T Hinges..... 40% }
Extra Hvy. T Hinges. 50&10% }
Hinge Hasps..... 33⅓% }
Cor. Heavy Strap... 60&5% }
Cor. Ex. Heavy T... 50&10% }

Screw Hook and Strap.
6 to 12 in.. lb. 3½¢
14 to 20 in.. lb. 3½¢
22 to 36 in.. lb. 3½¢

Screw Hook and Eye:
¾ to 1 inch..... lb. 6½¢
⅝-inch..... lb. 7½¢
½-inch ..... lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross.

Inch	*15*	*16*	*17*	*18*
Galv. Open...	*$35*	*$39*	*$42*	*$46*
Jap. Open....	*26*	*28*	*31*	*35*
Galv. Funnel.	*43*	*48*	*52*	*56*
Jap. Funnel..	*33*	*36*	*39*	*43*

10&5%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162..... each $1.05
Steel Mortar, No. 158..... each $1.35

Hoes— Eye—
Scovil and Oval Pattern..... 60&10@60&10&10%
Grub, list Feb. 23, 1899..... 70&10@75&10%

D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) 60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Weeding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Augular, ₱ doz. $24.00.....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze 25%
Empire 50%
Pullman 35%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip 50%
Superior 33⅓%

File and Tool—

Nicholson File Holders and File Handles .....33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs $1.25
Dash Rein Holder, ₱ doz. pairs..$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

Wire—

Belt 80%
Wire C. & H. Hooks....75@—%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton .....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—
See Wrought Goods

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz.$3.00
Grass, common grades, all sizes, per doz.....$1.50
Whiffletree .....lb. 5¾@6¢
Hooks and Eyes:
Brass .....60@60&10%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks 40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder .....80&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition .....ft. 5@ 6¢
3-ply Guaranteed.....ft. 8@ 9¢
4-ply Guaranteed.....ft.10@11¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8@ 9¢
Fair Quality.....ft.10@11¢

Irons— Sad—

From 4 to 10.....lb. 3@3½¢
B. B. Sad Irons.....lb.3¼@3½¢
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	83	80	93	91
Tin'd Tops	88	85	98	95

New England Pressing..lb.3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner 60%

Pinking—

Pinking Irons.....doz.60¢

Irons, Soldering

See *Coppers.*

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....35&2%; Steel, 45%
Lockport 50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Kettles—

Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Wilmington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....80%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's .....66⅔@70%
Watrous 16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz.$5.50@5.75
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Miscellaneous—

Farriers' .....doz. $3.00@3.25
Wostenholm's .....₱ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber Tip.....gro.$1.25@$1.40
Carriage, Jap., all sizes..... gro. 40@45¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 100.....50%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P. S. & W.....40&10%
Reading 60%

Lanterns—Tubular—

Regular, No. 0.....doz.$4.35@4.50
Side Lift, No. 0....doz.$4.60@4.75
Hinge Globe, No. 0.doz.$4.60@4.75
Other Styles.....40@40&10%

Bull's Eye Police—

3-inch .....$4.25@4.50

Latches— Thumb—

Roggin's Latches, with screw.. doz. 35@40¢

Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 .....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.50*	*2.25*	*2.00*
75 feet	*$2.10*	*1.80*	*1.65*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft. $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton.....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks.....33⅓%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass .....75&10%

Sash, &c.—

Iron' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pullman Patent Ventilating Lock..35%
Reading Sash Locks.....40%

Machines—Boring—

Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....25&7½%
Millers Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

Corking—

Reisinger Invincible Hand Power.... ₱ doz. $18.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake 20%
Moore's Cyclone, High Speed Chain Hoist 25%

Ice Cutting—

Chandler's 12½%

Washing

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$57.00
Champion Rotary Banner No. 1	$57.00
Standard Champion No. 1	$50.00
Standard Perfection	$27.00
Cincinnati Square Western	$33.00
Uneeda American, Round	$33.60

Mallets—

Hickory .....45&5@50%
Lignumvitæ .....45&5@50%
Tinners' Hickory and Applewood .....doz. 45&5@50%

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%
Lippincott's 30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest, 10-in., $2.00; 12-in., $2.10, etc.
Cheap, 10-in., $2.25; 12-in., $2.45, etc.
Better Grade, 10-in., $3.00; 12-in., $3.25, etc.

	12	*14*	*16*	*18-in.*
High Grade....	*$4.50*	*4.75*	*5.00*	*5.25*

Continental 60%
Great American.....70%
Great American Ball Bt'g, new list..70%
Quaker City.....70%
Pennsylvania 60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl, list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse .....40&5%
Pony .....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous .....87½@87½&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Coleman	13	12	12	11	11	.....net
New Haven..	23	21	20	19	18	...40&5%
Livingston	19	18	17	16	16	.....10%

Western .....₱ lb 8½¢
Jobbers' Special Brands..... per lb.9@10¢

Picture—

	1½	2	2½	3	*in.*
Brass H'd.	*.45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head.	*.. 1.10*	*1.10*	*1.10*		*.. gro*

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: Off list.
Square, Blank or Tapped..4.80¢
Hexagon, Blank or Tapped..5.10¢
Square, Bl'k, C., T. & R...5.10¢
Hexagon, Bl'k, C., T. & R..5.70¢
Hot Pressed:
Square, Blank.....5.70¢
Hexagon, Blank.....5.60¢
Square, Tapped.....5.10¢
Hexagon, Tapped.....6.00¢

Oakum—

Best .....lb., 6½¢
U. S. Navy.....lb., 6¢
Navy .....lb., 5¢
Plumbers' Spun Oakum..2¾@3¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated.....75%
Chase or Paragon:
Brass and Copper.....50&10%
Zinc .....65&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*

Sprague, Iron Handle....30@35¢
Sprague, Wood Handle...35@40¢
Sardine Scissors.....$1.75@$3.00
Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope .....20@25¢

Rubber—

(Fair quality goods.)

Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ₱ lb. 80¢.....25%

Miscellaneous—

American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@12½¢
Jute .....lb. 4@ 4½¢
Russia Packing.....lb. 8@11 ¢

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.....65&7½@70%
Edwards, Royal Blue.....65&7½%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz..	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz....	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.3½@5¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....6¢
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....3@5¢
Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll 48@58¢
Medium weight, 30 lbs. to roll. 56@70¢
Heavy weight, 40 lbs. to roll.. 75@78¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....$54.50
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton.... $34.00@$38.00
2 ply, roll 108 sq. ft.....65¢
3 ply, roll 108 sq. ft.....88¢
Slater's Felt (roll 500 sq. ft.) .80¢

Sand and Emery—

Flint Paper and Cloth.50&10@—%
Garnet Paper and Cloth....25%
Emery Paper and Cl'h..50&10@60%

Parers— Apple—

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy .....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger .....each $25.00
Livingston Nail Co.:
Daisy .....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance .....₱ doz. $4.00
Baldwin .....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

Potato—

Saratoga .....₱ doz. $7.00
White Mountain.....₱ doz. $8.00

Picks and Mattocks—

List, Feb. 23, 1899..70&10@70&10&5%
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40.

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50@50&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in.....60&10@—%
Extra Heavy, 2-6 in..70&10@—%
Fittings, Standard and Heavy, 75&10@—%

Pipe, Merchant—

	Consumers, Carloads. Steel. Blk.	Galv.	Iron. Blk.	Galv.
	%	%	%	%
⅛ & ¼ in...	64	48	57	41
⅜ in.....	66	52	59	41
½ in.....	68	56	61	49
¾ to 6 in....	72	62	66	56
7 to 12 in....	69	54	61	46

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 82%
Second-class 85%

Pipe, Stove—

	Per 100 joints. C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue....	$6.25	$7.25
6 in., Standard Blue....	6.75	7.75
7 in., Standard Blue....	7.75	8.75
5 in., Royal Blue.....	7.00	8.00
6 in., Royal Blue.....	7.50	8.50
7 in., Royal Blue.....	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color..	$6.15	$7.15
6 in., Uniform Color..	6.65	7.65
7 in., Uniform Color..	7.65	8.65

Planes and Plane Irons—

Wood Planes—
Bench, first qual.....30@30&10%
Bench, second qual...40@40&10%
Molding .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union 60%

Iron Planes—
Chaplin's Iron Planes.....50&10%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....per doz. $8.00

Plates—
Felloe .....lb. 4@4¼¢

Pliers and Nippers—
Button Pliers....75&5@75&10&5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	7	8	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers.....40&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's 60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Wm. Schollhorn Co.:
Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55%.
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Duplex.....30%
Woods' Extension.....33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers...lb. 9½¢
½-lb. papers.....lb. 10 ¢
¼-lb. papers.....lb. 10½¢

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal, Etc—
Prestoline Liquid, No. 1 (¼ pt.), per doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....60%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, per doz. 50¢; per gro. $4.50; ½ lb boxes, per doz. $1.25; 1 lb boxes, per doz. $2.25.
U. S. Liquid, 8 oz. cans, per doz., $1.25.
Barkeepers' Friend Metal Polish, per doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, per lb 10¢
Black Eagle, Liquid, ⅛ pt. cans.. per doz. 75¢
Black Jack Paste, ¼ lb cans, per gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, per gr. $5.75.....10%
Dixon's Plumbago.....per lb 8¢
Fireside .....per gr. $2.50
Gem, per gr. $4.50.....10%
Japanese .....per gr. $3.50
Jet Black.....per gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. per doz. $1.50

Poppers, Corn—
1 qt. Square..doz.$0.80; gro.$8.75
1 qt. Round..doz.$0.90; gro.$10.00
1½ qt. Square.doz.$1.00; gro.$11.00
2 qt. Square..doz.$1.25; gro.$13.50

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled .....35&10%
Tinned .....30&10%

Powder—
In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb.....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:

	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Presses—

Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

Seal Presses—
Morrill's No. 1, per doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail—
Cyclops 50%
Miller's Falls, No. 3, per doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, per doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant 50%
Staple Pullers, Utica and Davison 60%

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., ¾ in., $1.25; 5 in., $1.55

Inch	2	2¼	2½
Hot House, doz.	$0.65	.85	1.20
Inch	1¼	1½	2
Screw, doz.	$0.16	.19	.25
Inch	1¾	2	2½
Side, doz.	$0.25	.40	.55
Inch	1½	1¾	2½

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in.....17@20¢
Auger Mortise, no Face Plate. per doz., 1¾ and 2 in....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... per doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in.....20½¢
No. 26, Trov..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26..1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c.....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....per doz. $6.50
Flint & Walling's, Fast Mail Hand, (low list).....50%
Flint & Walling's Fast Mail (low list) 50%
Flint & Walling's Tight Top Pitcher. .....75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No.	*1*	*2*	*3*	*4*	
	$5.00	6.00	7.00	8.00	} 30%

Cup Leathers—Per 100:

Inch	2½	3	3½	4	
	$5.00	7.00	9.00	12.00	} 30%

Punches—
Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality $1.75
Revolving (4 tubes)....*doz.$3.50*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 35%; Paragon, 50%; Lodi.....55%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., per doz., $1.44.....40%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron..... *2½@2¾¢*
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢ 30%
Allith Mfg. Co.: Reliable Hanger Track 50%
Cronk's:
Double Braced Steel Rail..per ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, per 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, per 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, per 100 ft. $3.45
O. N. T., per 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....per 100 ft. $4.80
Lawrence Bros.:
1 x 3-16 in., per 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, per ft., 11¢, 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, per ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, per doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, per doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, per doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....per doz. $3.15
Lawn Queen, 24-tooth....per doz. $3.25
Paragon, 20-tooth.....per doz. $2.70
Paragon, 24-tooth.....per doz. $2.75
Steel Garden, 14-tooth....per doz. $2.40
Malleable Garden, 14-tooth, per doz. $2.00@2.25

Rasps, Horse—
Dieston's 75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard. .....60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Liana Bo-ras-ic.....60%
Fox Razors, per doz., No. 42, $28.00; No. 44, $20.00; No. 82, Platina, $25.00. } Dis. 40%
Red Devil.....65%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 96 PN.....20%
2904 P, 33¼%; 2904 PN, 33¼%; 0024 N, 33¼%; 02084 N, 33¼%; 002904 PN, 33¼%; 802 N, 33¼%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed .....70@70&10%
White Porcelain Enamel..50&10%
Solid Brass or Bronze Metal..40%

Revolvers—
Single Action.....$5¢@$1.00
Double Action, except 44 cal...$2.00
Double Action, 44 caliber....$2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade
16 in.....*per doz.$2.50@$2.75*
17 in.....*per doz.$2.75@$3.00*
18 in.....*per doz.$3.00@$3.25*

Rings and Ringers—

Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.10	1.25	1.65 doz.

Hog Rings and Ringers—
Hill's Rings, gro. boxes....$4.25
*Hill's Ringers, Gray Iron, doz.*60¢
Hill's Ringers, Malleable Iron.. *doz.80¢*
Blair's Rings.....*per gro.$5.00*
Blair's Ringers.....*per doz.75¢*
Brown's Rings.....*per gro.$5.25*
Brown's Ringers....*per doz.75¢*

Rivets and Burrs—
Copper 50%
Carriage, Coopers', Tinners, &c.:
Black .....70&10%
Metallic Tinned.....70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

Rope—
Manila, 7-16 in. diam. and larger: Pure.....lb., 11½@12¢
Sisal, 7-16 in. diam. and larger: Pure .....lb., 8¢
Sisal, 7-16 in. diam. and larger: No. 2 quality.....lb., 7@7¼¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed.....lb., 7@7¼¢
Pure.....lb., 9¼¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed.....lb., 6¼@6¾¢
Pure.....lb., 7¼¢
Cotton Rope: Best, ¼-in. and larger...18@20¢
Medium, ¼-in. and larger.16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread, No. 1, ¼-in. & up, lb., 7½@8¢
Thread, No. 2, ¼-in. & up, lb., 7@7½¢

Wire Rope—
Galvanized .....37½&2½%
Plain .....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

Rules
Boxwood.....60@60&10%
Ivory.....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Union Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¾ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, 108, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c. ..... 25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 25%
Disston's:
Concave Blades 25%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds File Co. 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete ..... 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames ..... 35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades ..... 30&10&5%
Sterling Hack Saw Frames ..... 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..... 10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%
Whitaker Mfg. Co.:
National Hand Blades 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 ..... 15&10%

Scales—

Family, Turnbull's ..... 50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. ..... *doz., $5.50*
Two Platforms, ½ oz. to 8 lbs. ..... *doz., $16.00*
Union Platform, Plain ..... *$1.70@1.90*
Union Platform, Stpd ..... *$1.85@2.15*
Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—

Box, 1 Handle ..... *doz. $2.00@2.25*
Box, 2 Handle ..... *doz. $2.50@2.60*
Ship ... Light, $2.00; Heavy, $4.50
Chapin-Stephens Co., Box ..... 30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood ..... *20@20&10%*
Hand, Wood ..... *70&10@70&10&10%*
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point ..... *75&10&10%*
Coach, Gimlet Point ..... *75&10&5%*
Hand Rail ..... *70&10@75%*

Jack Screws—

Standard List ..... *70&10@75%*
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—

Cut Thread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head ..... *40@40&10%*
Rolled Thread, F. H or R. H., Iron ..... *75&10%*
F. H. or R. H., Brass, Nos. 8 to 14 ..... *65&10%*

Set and Cap—

Set (Iron) ..... *75&10&7½%*
Set (Steel), net advance over Iron *25%*
Sq. Hd. Cap ..... *70&10&7½%*
Hex. Hd. Cap ..... *70&10&7½%*
Rd. Hd. Cap ..... *50&7½%*
Fillister Hd. Cap ..... *60&7½%*

Wood—

List July 23, 1903.
Flat Head, Iron ..... *87½&5@..%*
Round Head, Iron ..... *85&5@..%*
Flat Head, Brass ..... *80&5@..%*
Round Head, Brass ..... *77½&5@..%*
Flat Head, Bronze ..... *75&5@..%*
Round Head, Bronze ..... *72½&5@..%*
Drive Screws ..... *87½&5@..%*

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.
Grass, No. 1, Plain ..... *$6.25@6.75*
Clipper, Bronzed Webb ..... *$6.50@7.00*
No. 5 Clipper, Pol'd Webb ..... *$6.75@7.25*
No. 6 Clipper and Solid Steel ..... *$7.00@7.50*
Bush, Weed and Bramble, No. 2 ..... *$6.50@7.00*
Grain, No. 1 ..... *$8.25@8.75*
Bronzed Webb, No. 1 ..... *$8.50@9.00*
Nos. 3 and 4 Clipper, Grain ..... *$8.75@9.25*
Solid Steel, No. 6 ..... *$9.25@9.75*

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 ..... 20&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz sets $9.00

Sets, Nail—

Octagon ..... *gro. $3.50@3.75*
Buck Bros. 27½%
Cannon's Diamond Point, ℔ gro, $12 ..... 40&10%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. ..... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled Cup Pt. ..... ℔ gro. $7.50

Rivet—

Regular list ..... *75@75&10%*

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
Giant Royal Cross Cut ..... ℔ doz. $8.00
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz $1.50
Mounted Kitchen Sand Stone, ℔ doz $1.50
Natural Grit Carving Knife Hones, ℔ doz $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz $1.50
Quick Edge Pocket Knife Hones, ℔ doz $2.50
} 25 & 10

Skate—

Smith & Hemenway Co., Eureka 50%

Shaves, Spoke—

Iron ..... *doz. $1.25*
Wood ..... *doz. $2.00*
Bailey's (Stanley R. & L. Co.) 40%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's ℔ doz. 79.00 ..... 15&10%

Shears—

Cast Iron	7	8	9 in.	
Best	$15.00	18.00	20.00	gro.
Good	13.00	15.00	17.00	gro.
Cheap	5.00	6.00	7.00	gro.

Straight Trimmers, &c.:
Best quality Jap ..... *70@70&10%*
Best quality, Nickel ..... *60@60&10%*
Tailors' Shears ..... *40@40&10%*
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%

Tinners' Snips—

Steel Blades ..... *20&5@20&10%*
Steel Laid Blades ..... *40&10@50%*
Forged Handles, Steel Blades, Berlin 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6¼ to 10 in. ..... 33⅓&7½%
Niagara Snips 40%
P. S. & W. Forged Handles, 25%; W. R. W. ..... 40&10%

Pruning Shears—

Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand ..... 60&10%

Sheaves—Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 10%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union, League, 12 and 12 gauge; Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade 20%

Shells, Loaded—

Loaded with Black Powder *40%*
Loaded with Smokeless Powder, medium grade ..... *40&5%*
Loaded with Smokeless Powder, high grade ..... *40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders ..... 40&5%
Arrow, Smokeless Powders ..... 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ..... 40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	$4.25	$5.50
Dixie, 10 x 14 in.	4.50	6.00
Dixie, 7 x 10 in.	5.00	6.75

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... *per keg. $4.10*
Steel ..... *per keg. $3.85*
Burden's, all sizes ..... ℔ keg $3.90

Shot—

25-lb. bag.
Drop, up to B *$1.85*
Drop, B and larger *2.10*
Buck *2.10*
Chilled *2.10*
Dust *2.30*

Shovels and Spades—

Association List, Nov. 15, 1902 ..... 40%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle ..... *$3.25@$3.50*
Wood and Mall, D. Handle ..... *$3.75@$4.00*

Sieves and Sifters—

Hunter's Imitation ..... *gro. $9.50@10.00*
Hunter's Genuine ..... *per gro. $12.00@12.50*

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. $39.00

Sieves, Seamless Metallic

	—Per dozen.—			
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested ..... *doz. $0.90@0.95*
Mesh 20, Nested ..... *doz. $1.00@1.05*
Mesh 24, Nested ..... *doz. $1.30@1.40*

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in. *60%*
20 x 40 to 24 x 50 in. *50%*
24 x 60 to 24 x 120 in. *30%*
Barnes' low list:
Up to and including 20 x 36 in. ..... 50&5%
20 x 40 to 24 x 50 in. 45%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... *70@75&10%*
Steel ..... *40@45%*

Slates, School—

Factory Shipments.
"D" Slates ..... *50@50&10%*
Eureka, Unexcelled Noiseless ..... *60&5 tens*
Victor A, Noiseless ..... *60&5 tens &5%*

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... *40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—

Scythe ..... *55@60%*

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality ..... *50&10@60&5%*
Cheap ..... *60@60&10%*
International Silver Co.:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous

German Silver ..... *60@60&5%*

Tinned Iron—

Teas ..... *per gro. 50@55¢*
Tables ..... *per gro. $0.90@$1.00*

Springs— Door—

Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman (Coil) 35%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 39 in. ..... ℔ doz. $1.10

Carriage, Wagon, &c.—

1¼ in. and Wider: Per 100 lb.
Black ..... *$4.75@$5.00*
Half Bright ..... *$4.75@$5.00*
Bright ..... *$5.25@$5.50*
Painted Seat Springs:
1½ x 2 x 26 ..... *per pr. 49@52¢*
1½ x 3 x 28 ..... *per pr. 73@77¢*

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—

Nickel plated } *List Jan. 5, 1900.*
Steel and Iron } *75&10@80%*
Rosewood Hdl. Try Square and T-Bevels ..... *60&10&10@70%*
Iron Hdl. Try Squares and T-Bevels ..... *40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60&10%; Iron Stock and Bevel 15%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... *doz. $1.00*
Good Grade ..... *doz. $1.25*
Tinned Iron ..... *doz. $0.75@1.25*
Iron, Porcelain Lined ..... *doz. $1.75*

Staples—

Barbed Blind ..... *85&5@85&10%*
Electricians' ..... *80&10&10@85%*
Fence Staples, Plain, $2.15; Galvanized *$2.45*
Poultry Netting Staples ..... *per lb. 3¼@3½¢*

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— .... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... *50@50&10%*
Curtis Rev'ble Ratchet Die Stock 25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $1.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks .. 40%
Hindostan No. 1, R'g'lar. ℔ lb 8¢
Hindostan No. 1, Small .. ℔ lb 15¢
Axe Stones (all kinds) 33⅓%
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 40¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 8¢

Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ℔ gro. $12.00
Lamoille S. S., ℔ gro. $11.00
White Mountain S. S., ℔ gro. $9.00
Green Mountain S. S., ℔ gro. $6.00
Extra Indian Pond S.S., ℔ gro. $7.50
No. 1 Indian Pond S.S., ℔ gro. $7.00
No. 2 Indian Pond S.S., ℔ gro. $4.50
Leader Red End S. S., ℔ gro. $4.50
Quick Cut Emery, ℔ gro. $10.00
Pure Corundum, ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%.
Electro (Artificial), ℔ gro., $12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers ..... ℔ gro. $9.00

Stops— Bench—

Millers Falls ..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00 ..... 50%
Morrill's, No. 2, $12.50 ..... 60%

Door—

Chapin-Stephens Co. ..... 50@50&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket ..... doz. $1.66
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00 ..... 20%

Stuffers, Sausage—

Enterprise Mfg. Co. ..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co. ..... 40&10&5%

Sweepers, Carpet—

	℔ doz.
Bissell Carpet Sweeper Co.:	
Superba, Crotch Mahogany	$36.00
Triumph, Fancy Veneers	$33.00
Parlor Queen, Fig. Rosewood	$30.00
Elite, Hungarian Ash	$29.00
Am. Queen, Fig. Mahogany	$27.00
Ideal, Bird's-Eye Maple	$25.00
Grand Rapids, Nickel,	$24.00;
Japan	$22.00
Standard, Nickel, $22.00; Japan	$20.00
Crown Jewel, Nickel, $21.00; Jap.	$19.00
Crystal, Glass Top	$36.00
Grand, 17 in. wide	$36.00
Club, 24 in. wide	$54.00
Hall, 28 in. wide	$60.00

NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks ..... 90&25%
American Cut Tacks ..... 90&25%
Swedes' Cut Tacks ..... 90&25%
Swedes' Upholsterers' ..... 90&35%
Gimp Tacks ..... 90&35%
Lace Tacks ..... 90&35%
Trimmers' Tacks ..... 90&25%
Looking Glass Tacks 65%
Bill Posters' and Railroad Tacks ..... 90&40%
Hungarian Nails ..... 80&10%
Finishing Nails 70%
Trunk and Clout Nails 80%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks ..... 90&10@90&10&10&5%
See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.: Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
120	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin ..... 50@—%
Patent Leather ..... 25@30&5%
Steel ..... 33 1-3&5%
Chesterman's ..... 25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin ..... 40&10@50%
Favorite, Duck and Leather ..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin ..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather ..... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger ... per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c. ..... 30@33⅓%

Ties, Bale—Steel Wire—

Single Loop ..... 80&10&5%
Monitor, Cross Head, &c. 70&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White ..... 20@20&5%

Haying—

Myers' Hay Tools 45%

Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated $2.00

Saw—

Atkins' Cross Cut Saw Tools ..... 35&5%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. ..... $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida ..... 75&10%
Newhouse ..... 45@45&5%
Hawley & Norton 65%
Victor ..... 75@75&10%
Oneida Community Jump 60%
Hector ..... 75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25..$11.50 doz.
No. 3, Rat, ℔ doz., $6.50... $5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz.... $0.60
Out o' Sight, Rat, ℔ doz..... 1.25
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... 1.00
Wood Choker, Rat, ℔ doz. holes. .12
Premier Tin Choker, 5 hole, ℔ doz. traps..... .75

Trowels—

Disston Brick and Pointing... .....25%
Disston Plastering..... .....20%
Disston "Standard Brand" and Garden Trowels..... .....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Woodrough & McParlin, Plastering. 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern ..... 50&10%
Western Pattern ..... 60&10%
Handy Trucks ..... ℔ doz. $16.00
Grocery ..... ℔ doz. $15.00
McKinney Trucks ..... each, net $10.00
Model Stove Trucks ..... ℔ doz. $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized	$67	$79	$89	$99

10&5%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls. 23@23¢
No. 12, ¼ and ½-lb. Balls. 21@23¢
No. 18, ¼ and ½-lb. Balls. 18@20¢
No. 24, ¼ and ½ -lb. Balls. 17½@19½¢
No. 36, ¼ and ½-lb. Balls. 17@19¢
Chalk Line, Cotton ½-lb. Balls ..... 26@31¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz. ..... 11@19¢
Cotton Wrapping, 5 Balls to lb., according to quality... 15½@23¢
American 2-Ply Hemp, ¼ and ½-lb. Balls ..... 14½@15½¢
American 3-Ply Hemp. 1-lb. Balls ..... 15½@16½¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine). 10½@11½¢
India 3-Ply Hemp, 1-lb. Balls 10½@11½¢
India 3-Ply Hemp, 1½-lb. Balls. 10@11¢
2, 3, 4 and 5-Ply Jute. ½-lb. Balls ..... 13½@15½¢
Mason Line, Linen, ½-lb. Bls. 47¢
No. 26½ Mattress, ¼ and ½-lb. Balls, according to quality. 30@60¢
Wool, 3 to 6 ply.... B 9¢; A 10¢

Vises—

Solid Box ..... 50@50&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel 25%
Star, Solid Jaw 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch, 50%; Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip 15%
Merrill's 20%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Rock Island 25%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps 30%
Perfection Saw Clamps, ℔ doz.... $4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
Reed 25%
Star 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe 25%

Wads—*Price per M.*

B. E., 11 up ..... 60¢
B. E., 9 and 10 ..... 70¢
B. E., 8 ..... 80¢
B. E., 7 ..... 80¢
P. E., 11 up $1.00
P. E., 9 and 10 ..... 1.25
P. E., 8 ..... 1.50
P. E., 7 ..... 1.50
Dis. 15%
Ely's B. E., 11 and larger. $1.70@1.75
Ely's P. E., 12 to 20 .... $3.00@3.25

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled ..... 45&10%
Ground ..... 50&5%
Plain or Unground 60%
Country Hollow Ware, per 100 lbs. $3.00
White Enameled Ware:
Maslin Kettles ..... 65&10%
Covered Wares:
Tinned and Turned ..... 35&10%
Enameled ..... 45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 33⅓%
Iron Clad Ware ..... 70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles. 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc:	℔ doz.
Crescent, family size, bent frame	$4.05
Red Star, family size, stationary protector	$4.05
Double Zinc Surface:	
Saginaw Globe, family size, stationary protector	$3.55
Cable Cross, family size, stationary protector	$3.60
Single Zinc Surface:	
Naiad, family size, open back, perforated	$3.00
Single Saginaw Globe	$2.85
Brass Surface:	
Brass King, Single Surface, open back	$4.05
Nickel Plate Surface:	
No. 1001 Nickel Plate, Single Surface	$3.60
Glass Surface:	
Glass King, Single Surface, open back	$3.95
Enamel Surface:	
Enamel King, Single Surface, ventilated back	$3.95

Washers—Leather, Axle—

Solid ..... 90@90&10%
Patent ..... 90@90&5%
Coil: ⅜ 1 1¼ 1¼ Inch.
11¢. 12¢. 13¢. 15¢. per box

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers.... $5.40 4.50 3.20 3.00 2.80
The above prices are based on $6.00 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots ..... per lb. 1¾@2¢

Wedges—

Oil Finish ..... lb., .. @3¢

Weights—Hitching—

Covert Mfg. Co. ..... 30&2%

Sash—

Per ton, f.o.b. factory:
Eastern District... $25.00@$28.00
Southern Territory..... $25.00
Western and Central Districts ..... $24.00@$27.50

Wheels, Well—

8-in., $2.22; 10-in., $2.82; 12-in., $3.36; 14-in., $4.80.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 ..... 72&10&7½%
10 to 18 ..... 72½&10&10%
19 to 26 ..... 75&10&10&2½%
27 to 36 ..... 77½&7½%
Galvanized:
6 to 9 ..... 72½&10%
10 to 14 ..... 72½&10&5%
15 to 16 ..... 72½&10&5%
17 to 18 ..... 72½%
19 to 26 ..... 70&5&2½%
27 to 36 ..... 67½&10%
Coppered:
6 to 9 ..... 65&10&10%
10 to 14 ..... 70&10&5%
15 to 18 ..... 65&10&10&10%
19 to 26 ..... 70&5&2½%
27 to 36 ..... 72½&10&2½%
Tinned:
6 to 18 ..... 67&10&10%
Brass ..... 17½¢ lb., base
Copper ..... 32¢ lb., base
Cast Steel Wire 50%

Spooled Wire—

Annealed and Tinned..70&10&10%
Brass and Copper.....60&10&10%
Retailers' Assortments, per box, $2.10@$2.40
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods ..... 90&25%
Brass Wire Goods .... 90@90&10%
Brass Cup and Shoulder Hooks, 80&15%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.30
Standard Galv. Hardware Grade: Per 100 sq. ft.
Nos 2, 2½ & 3 Mesh $2.50
Nos. 4 and 5 Mesh $2.75
No. 6 Mesh $3.00
No. 8 Mesh $3.50

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural ..... 75@75&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S ..... 45@45&5%
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut 50%
Combination Black ..... 40&5%
Merrick Pattern 50%
Boardman's 40%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes', Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer ..... 40&10%
Eagle 70%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots ..... 50&5%
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots ..... 40&10&5%
Solid Handles, P., S. & W., 50&10%; full cases ..... 50&10&5%
Stillson 65%
Uwanta Wrench Co.:
Railroad Special, Iron Handle, 40&10&5%
Other Wrenches 50%
Vulcan and Agrippa Chain 50%
Whitaker Machinists':
Case lots ..... 50&10%
Less than case lots 50%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92 ..... 90%

Zinc— *(Cask lots at mill.)*

Sheet ..... per 100 lb. $7.00

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:	
1 to 1½ in. round and square; 1½ to 4 in. x ⅜ to 1 in.	₩ lb 2.00¢
1½ to 4 in. x ¼ to 5-16	₩ lb 2.20¢
Rods—⅝ and 11-16 round and square	₩ lb 2.20¢
Angles:	Cts ₩ lb
3 in. x ¼ in. and larger (except 3½ in. and 4 x ¼ 2.50¢)	2.40¢
3 in. x 3-16 in. and ⅛ in.	2.65¢
1½ to 2½ in. x ⅛ in.	2.45¢
1½ to 2¾ in. x 3-16 in. and thicker	2.40¢
1 to 1¼ in. x 3-16 in.	2.45¢
1 to 1¼ x ⅛ in.	2.50¢
⅞ x ⅛ in.	2.65¢
¾ x ⅛ in.	2.75¢
⅝ x ⅛ in.	3.80¢
½ x 3-32 in.	4.30¢
Tees:	
1 in.	2.75¢
1¼ in.	2.55¢
1½ to 2½ in.	2.45¢
3 in. and larger	2.50¢
Beams	2.40¢
Channels, 3 in. and larger	2.40¢
Bands—1½ to 6 x 3-16 to No. 8	2.45¢
"Burden's Best" Iron, base price	3.20¢
Burden's "H. B. & S." Iron, base price	3.10¢
"Ulster"	3.10¢
Norway Bars	3.60¢
Norway Shapes	3.80¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	2.10¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

B'ack

	One Pass, C.R. Soft Steel.	R. G. Cleaned.
No. 14	₩ lb 2.85	2.90¢
Nos. 18 to 21	₩ lb 2.95	3.10¢
No 27	₩ lb 3.15	3.40¢
No. 28	₩ lb 3.20	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment, W. Dewees wood	₩ lb 11¾@14½¢
Patent Planished	₩ lb A, 10¢; B, 9¢, net.

Galvanized.

Nos. 14 to 16	₩ lb, 3.15¢
Nos. 22 to 24	₩ lb, 3.55¢
No. 27	₩ lb, 4.00¢
No. 28	₩ lb, 4.25¢

No. 20 and lighter 36 inches wide, 25¢ higher.

Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal:	
IC, 14 x 20	$6.40
IX, 14 x 20	7.65
A. Charcoal:	
IC, 14 x 20	$5.45
IX, 14 x 20	6.55

American Coke Plates—Bessemer-

IC, 14 x 20	107 lb	$4.00
IX, 14 x 20		5.45

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8 60
IX, 20 x 28 with an 8 lb. coating	10.60

Seamless Brass Tubes—

List December 4, 1905. Base price 20 ¢

Brass Tubes, Iron Pipe Sizes—

List December 4, 1905. Base price 20¢

Copper Tubes—

List December 4, 1905. Base price 23¢

Brazed Brass Tubes—

List June 6, 1898. 22½¢ ₩ lb

High Brass Rods—

16½¢ ₩ lb

Roll and Sheet Brass—

List June 6, 1898. 16½¢ ₩ lb

METALS—

Tin—

Straits Pig	₩ lb 29 @30 ¢

Copper—

Lake Ingot	₩ lb 15 @15¼¢
Electrolytic	₩ lb 14¾@15¼¢
Casting	₩ lb 14½@15 ¢
Sheet Copper Hot Rolled, 16 oz	₩ lb 18@..¢
" " 14 "	" " 19@..¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₩ lb 23¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.

Spelter—

Western ₩ lb 5½@6 ¢

Zinc.

No. 9, base, casks, ₩ lb 7.50¢ | Open ₩ lb 8.00¢

Lead.

American Pig	₩ lb 4½@5 ¢
Bar	₩ lb 5¾@6 ¢

Solder.

½ & ½, guaranteed	₩ lb 20½@2'1¼¢
No. 1	₩ lb 18½@19¼¢
Refined	₩ lb 16½@17 ¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ lb ..@12¢
Halletts	@11¢
Other Brands	@10¢

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots .38¢
100-lb lots .36¢

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy and Wire	₩ lb 11.50@12.00¢
Copper, Light and Bottoms	₩ lb 10.75@11.00¢
Brass, Heavy	₩ lb 8.50@ 9.00¢
Heavy Machine Composition	₩ lb 9.50@10.00¢
Clean Brass Turnings	₩ lb 7.50@ 8.00¢
Composition Turnings	₩ lb 9.25@10.00¢
Lead, Heavy	₩ lb ....@ 3.25¢
Tea Lead	₩ lb ....@ 3.00¢
Zinc Scrap	₩ lb ....@ 3.00¢
No. 1 Yard Wrought, Long	$ 8.50@ 9.00
No. 1 Yard Wrought, Short	$ 8.00@ 8.50
Wrought Pipe	$ 6.50@ 7.25
No. 1 Machinery Cast	$11.00@11.50
Stove Plate	$ 9.50@10.00

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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